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Techniques to Save You Time

HIGH-TECH COUPLES:

In Business at Home

Machine-Specific News for Apple II, Atari, Commodore, IBM, Macintosh, MS-DOS, and Tandy Owners

24 Software Reviews

EDUCATION:

Do Computer Skills Mean Better Jobs?

PRODIGY:

An Electronic Network With Mass Appeal?

HYPERCARD:

Create a 'To Do' Stack

Free Original Graphics Program

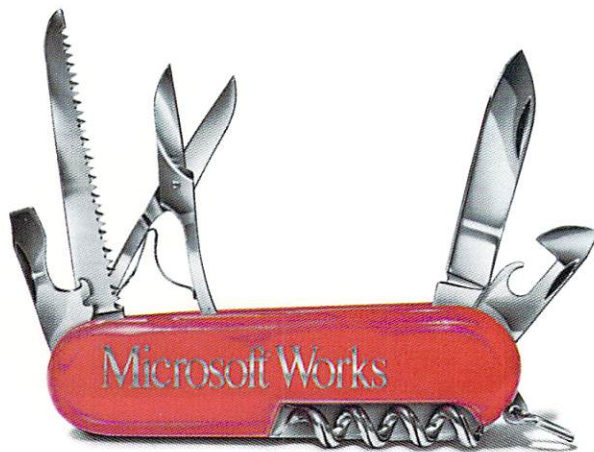


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October 27, 1987

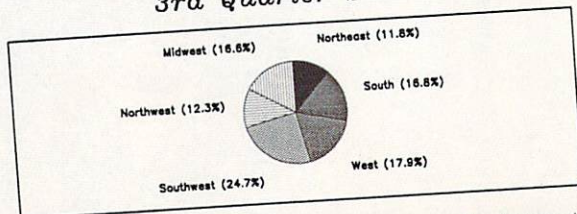
Mr. Jonathan Smith
Northwest Regional Sales Manager
Progressive Office Supplies
16011 NE 36th Way
Redmond, WA 98073

Dear Jon:

Congratulations!

Your hard work during the past few months has resulted in the most successful 3-month sales period in the history of Progressive Office Supplies. All six regions increased sales over the previous 3-month period, with the Southwest Region posting record sales of \$117,282.12, representing almost 25% of our total 3rd Quarter sales.

3rd Quarter Sales



As anticipated, the sales of typewriter supplies have continued to decline. This has, however, been more than offset by the increased sales of computer supplies, as reflected in the table below:

| | April | May | June | TOTALS |
|---------------------|---------------------|---------------------|---------------------|---------------------|
| Copier Supplies | \$27,101.22 | \$24,456.65 | \$33,140.97 | \$84,698.84 |
| Computer Supplies | \$36,387.26 | \$45,776.13 | \$44,600.59 | \$126,763.98 |
| Typewriter Supplies | \$42,735.40 | \$45,688.66 | \$40,214.73 | \$128,638.79 |
| Mailroom Supplies | \$45,122.10 | \$42,678.40 | \$47,603.15 | \$135,403.65 |
| TOTAL SALES | \$151,345.98 | \$158,599.84 | \$165,559.44 | \$475,505.26 |

Again, congratulations to you for such a strong 3rd Quarter. I look forward to thanking you in person at the sales meeting next month in Hawaii.

Sincerely,

Frank Addison
President

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TER SALES ROUP, MONTH AND REGION

| | APRIL | MAY | JUNE | REGIONAL SUBTOTALS |
|--------------|---------------|--------------------|--------------------|-----------------------|
| 1 | \$3,781.31 | \$3,738.00 | \$4,853.70 | \$12,373.01 |
| 2 | \$4,424.59 | \$3,985.05 | \$4,885.74 | \$13,295.38 |
| 3 | \$4,498.20 | \$4,211.85 | \$5,482.26 | \$14,192.31 |
| 4 | \$6,323.99 | \$4,567.85 | \$7,834.23 | \$18,726.07 |
| 5 | \$3,868.35 | \$4,049.85 | \$5,018.58 | \$12,936.78 |
| 6 | \$1,204.78 | \$3,904.05 | \$5,066.46 | \$13,175.29 |
| TOTAL | 101.22 | \$24,456.65 | \$33,140.97 | \$84,698.84 |
| 15.89 | \$3,728.40 | \$2,550.20 | \$8,394.49 | |
| 16.21 | \$7,173.09 | \$7,600.04 | \$20,759.34 | |
| 5.80 | \$7,581.33 | \$8,527.96 | \$22,195.09 | |
| 1.88 | \$12,976.29 | \$10,234.55 | \$34,487.72 | |
| 65 | \$7,289.73 | \$7,806.68 | \$20,330.06 | |
| 83 | \$7,027.29 | \$7,881.16 | \$20,597.28 | |
| 6 | \$45,776.13 | \$44,600.59 | \$126,763.98 | |
| 3 | \$3,977.60 | \$4,201.95 | \$12,630.02 | |
| 7 | \$7,438.76 | \$6,242.89 | \$21,229.48 | |
| 13 | \$7,862.12 | \$7,005.11 | \$22,540.63 | |
| 13 | \$13,562.90 | \$12,878.34 | \$37,733.13 | |
| 5 | \$5,559.72 | \$3,412.63 | \$13,571.30 | |
| 83 | \$7,287.56 | \$6,473.81 | \$20,934.23 | |
| 6 | \$45,688.66 | \$40,214.73 | \$128,638.79 | |
| 7 | \$7,476.00 | \$8,359.15 | \$22,730.48 | |
| 18 | \$7,970.13 | \$9,412.56 | \$24,451.06 | |
| 7 | \$8,423.79 | \$9,441.67 | \$24,451.06 | |
| 7 | \$7,900.56 | \$9,441.67 | \$24,451.06 | |
| 7 | \$7,900.56 | \$9,441.67 | \$24,451.06 | |

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INVOICE

December 15, 1987

TO: Fred Blaine
975 Rockside Hill
Indianapolis, IN 46238
(317) 285-3875

software

Manufacturer:
Model:
Required Systems:

Microsoft Corporation
Microsoft Works
Apple Macintosh, Macintosh Plus, Macintosh II,
IBM PC, PS/2 or Compatible

Standard accessories

Word processing:

Font support

Mail merge
Mailing labels

Mailing labels
More than 50 functions

At least 256 by 4,096 cells

At least 5 chart types
Form and list views

Calculated database fields

VT 52/100 terminal
freedom support

Xmodem support
Other word processing files

Other spreadsheet files
Other database files

Other database
Context-sensitive

On-line tutorial

Multiple files open simultaneously
Dynamic chart linking

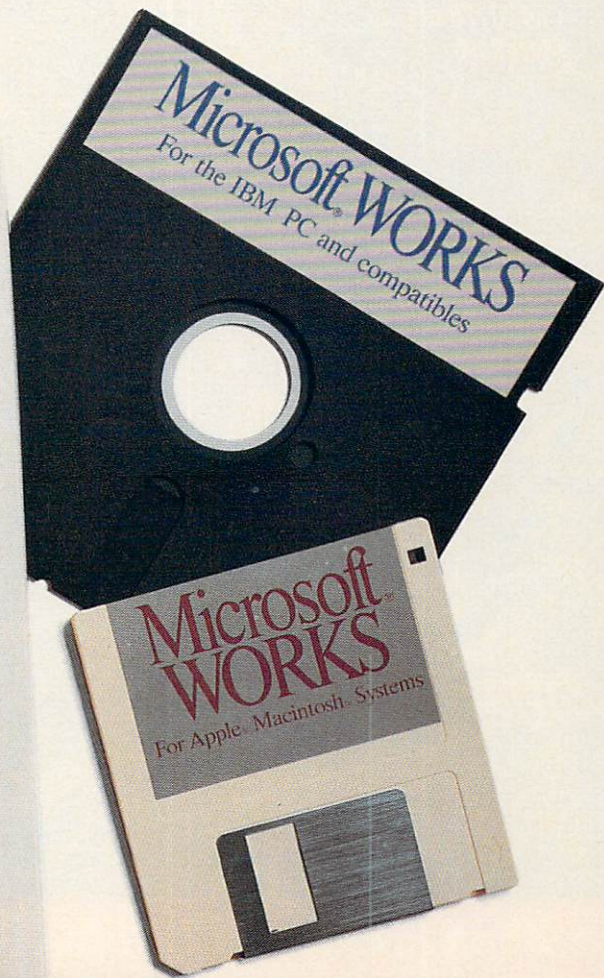
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Price

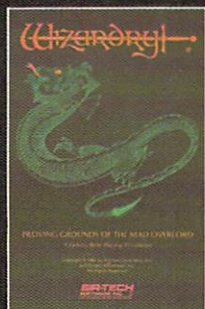
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List price:

Easy to use,
easy to learn:

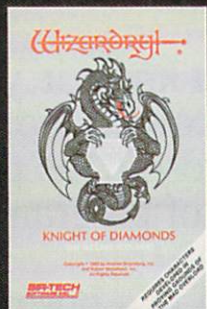


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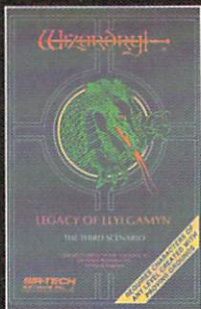
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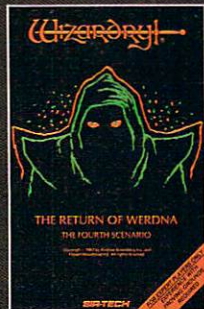
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FAMILY & HOME OFFICE COMPUTING

COVER STORY

39 DESKTOP PRESENTATIONS: A BETTER WAY TO SELL YOUR IDEAS

Make your business more successful by creating professional-quality desktop presentations. You can transform on-screen text and graphics into persuasive color slides, printouts, and overhead transparencies.

THE OFFICE AT HOME

8 PAPER CAN MAKE OR BREAK YOUR IMAGE

The computer paper you use can determine the impression you make on potential clients or customers. Here are choices for maximum professional impact.

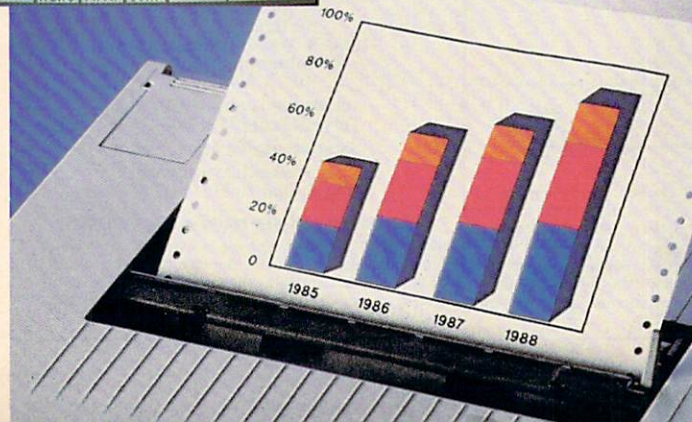
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COVER PHOTOGRAPH BY JOEL WHITE

EDITOR'S NOTE

AMATEUR NIGHT IS OVER

In the days when we started publishing, it was easy to tell from a quick glance at my mail just who owned a computer. The first sign was the paper's ragged, perforated edges or slippery surface. Naturally, almost everything had the dotty look, having been dot-matrix produced, and there was no shortage of faint print-outs, indicating worn, over-used ribbons. Oh, and how could I forget the long, narrow, adding-machine-width scrolls that often crossed my desk!

Now, some drum rolls please. It's time to announce . . . amateur night is over! With major advances in technology, prices at affordable levels for large numbers of users, and acceptable standards in place, a new computing generation has emerged. We have entered the age of the home-based professional.

For those of you seeking to earn money with your computers, form can be nearly as important as content. First impressions are all you can be certain you'll get, so you have to make sure they're good. If a client doesn't like the way a presentation looks, your ideas may never see the light of day.

This issue will be especially helpful to those concerned with making an impact. Whether you're looking for new business or more business from old clients, you'll find the following three articles particularly helpful: "Paper Can Make or Break Your Image" (page 8); "Presentation Graphics: A Better Way to Sell Your Ideas" (page 39); and our "Buyer's Guide to Color Printers" (page 45), which helps you get the full benefit of your color graphics and high-resolution display. A must for everyone is the second half of Rob Krumm's two-part word-processing piece, "Time-



Design Director Vincent Ceci and Editor-in-Chief Claudia Cohl on the set.

saving Techniques for Word Processing: Let the Computer Do the Work" (page 52).

And as far as impressions go, especially first ones, nothing is more important for a magazine than its cover. Many of our cover photographs are the handiwork of photographer Joel White. White's multifaceted talents get a full workout when he's called on to produce a complex set as well as take the photographs.

This month's cover was not so taxing. In the photo above, you can see Design Director Vincent Ceci and me in front of our simple set. Watch future issues for more examples of Joel's work. And of course we hope that our work is filling your needs.

Claudia Cohl

CLAUDIA COHL
EDITOR-IN-CHIEF

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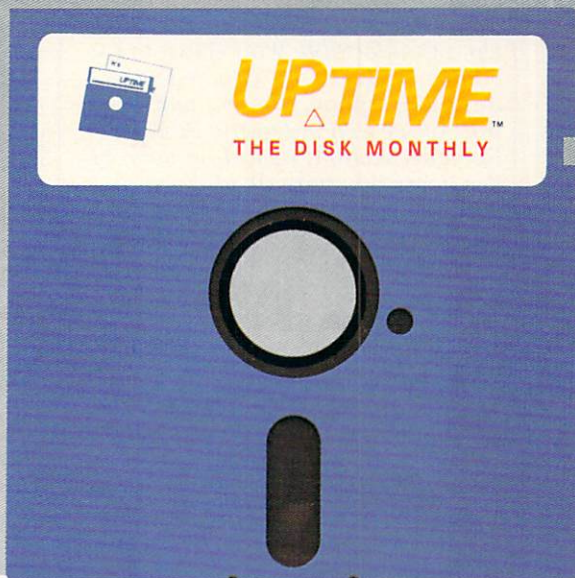
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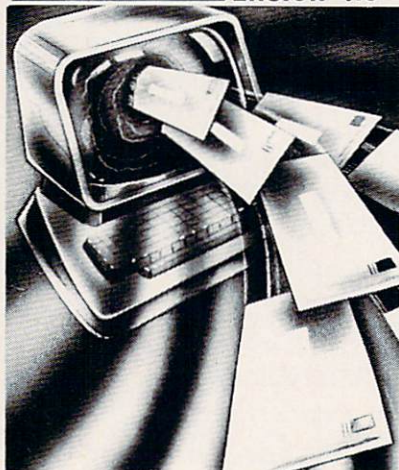
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LETTERS

HOW TO FIT IN A HOME OFFICE?

Your new emphasis on the home office fills a badly needed space among computer publications. I read everything I can get on the subject and plan to start a home business upon retirement next year.

However, since my space is limited, my layout is proving difficult. I suggest you publish an article or series on the home-office layout, including floor plans, photos of set-ups, and equipment.

HOWARD C. PARSONS
Raleigh, North Carolina

EDITOR'S NOTE: Articles on setting up, equipping, and running a home office are in the works; Joanne Pratt's March Home-Office ShopTalk column mentions two books that might help you. If you have back issues, read Charles Gajeway's article "Set Up a Comfortable Workspace to Increase Productivity" (Home Office, July 1986; page 10). You will notice that we've expanded the Product Reviews section, including more of the items you may need, such as space-saving, comfortable furniture, useful accessories, multiline telephones, facsimile phones, computers, and peripherals.

COMPUTERS AND LIBRARIES

I enjoyed the article "Computing on Borrowed Time" (Home-School Connection, October 1987), and I would like to tell your readers about People's Computer Company, a nonprofit educational research and training group. ComputerTown, USA, a 1986 project funded by the National Science Foundation through the People's Computer Company, did much to encourage computer usage in libraries and other community access centers worldwide. People's Computer Company (2682 Bishop Dr., Suite 107, San Ramon, CA 94583; [415] 830-4200) is carrying on much of the work initiated by ComputerTown, USA.

BOB ALBRECHT
EDITOR, ADVENTURES IN LEARNING
Menlo Park, California

SOFTWARE FOR YOUNG PUBLISHERS

Recently, I've read about a software package for the Apple IIe that creates personalized books for children. I've seen some books printed with it, and I am very impressed.

Do you know where I can purchase this software?

DINO ROMAGNOLI
Greensburg, Pennsylvania

EDITOR'S NOTE: Two choices are Build a Book About You (Mindscape; [312] 480-7667; 128K Apple, 128K IBM PC, C 64/128; \$25) and Once Upon a Time . . . (Compu-Teach; [203] 777-7738 or [800] 448-3224; 128K Apple, 256K IBM PC; \$40).

READ BEFORE YOU LEAP

I'd like to caution the reader interested in the Commodore PC 10-2 (Letters, December 1987).

If you intend to connect an RGB or color composite monitor to the PC 10-2, you must first reset DIP switches on the computer's ATI Graphics Solution Adapter and one DIP switch on the motherboard, or your monitor may suffer damage that is not covered by its warranty.

This information is on page 9 of the adapter manual, but there are plenty of us who will plug everything in and then read the documentation. Too late then.

H.L. RHYNE, JR.
Gastonia, North Carolina

SOFTWARE PIRATES BEWARE!

If copying, or pirating, software is illegal, why do publishers sell programs such as LockSmith, which can break copy protection? I have seen copied software for sale for as much as \$200; it seems as if this kind of copying would mean a big loss to the publishers.

AIMEN MIR
Akron, Ohio

EDITOR'S NOTE: A lack of copy protection does not mean the program lacks a copyright, and it is illegal to duplicate and sell most copyrighted software. However, it is legal to use programs such as LockSmith to break copy protection, as long as subsequent copies are for personal use or for backing up the original and are not transferred to any other party. Before you duplicate any software, read the package and documentation.

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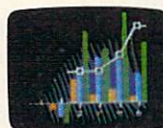
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"... I highly recommend Loadstar. If you can afford only one disk service, make it Loadstar..."

STEVE LEVIN, COMMODORE MICROCOMPUTERS

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THE OFFICE AT HOME

PAPER CAN MAKE OR BREAK YOUR IMAGE

Your Letterhead, Invoices, Bills, and Labels Say a Lot About Your Business

BY ROGER HART

Computers perform two important functions for businesses, large and small. They enhance productivity, and they enhance image.

Productivity enhancement—doing the job better and faster—is a well-known benefit of using computers. Now, let's take a look at a simple and economical way to bolster the image of your business activities—by choosing the right printer paper.

Paper can add professionalism to everything that rolls through your printer and on to your customers and prospects—invoice forms, letterhead, labels, and all those other printed items so important to a growing business.

PAPER'S LOOK AND FEEL

You'll usually be buying paper by the box, not by the pound, but weight is an indicator of a paper's thickness and feel. Ordinary pin-feed computer paper is available in 15-, 18-, and 20-pound (pound is often abbreviated as "#") varieties. The source of this designation is the actual weight of 2,000 letter-sized sheets of paper. The 18-pound type is widely used, but the heavier 20-pound variety has a better look and feel for correspondence. Rediform's Computer Stationery, for example, comes in 20-pound stock.

Content. Paper is made from various substances, including rags, wood, cotton, and recycled paper. The relative amounts of these ingredients determine the quality, strength, and appearance of the finished paper stock. Basic continuous-form paper is commonly made from wood pulp, often with recycled stock added. Quality letterhead paper, on the other hand, is usually composed of rags, cotton, or both. A 25 percent rag stock makes a good correspondence-grade letterhead paper.

Finish. Finish is another element to consider when buying paper. Most paper has a smooth finish, but there are also ripple, deckle, and cockle finishes that add rich tones

to letterhead stationery and envelopes. These fancy finishes, however, add 30–40 percent to the paper's price. And don't forget color. A warm ivory-colored stock, for example, adds elegance and prestige to your correspondence.

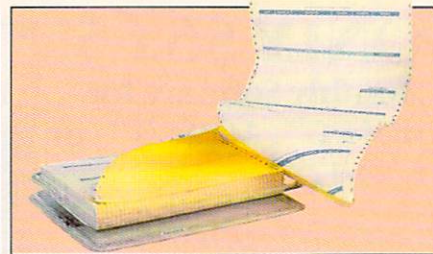
Carbonless Forms. Many preprinted multipart business forms are made from carbonless paper with a special coating on the underside that makes a carbonlike image when pressed from above. Similarly, two-ply carbonless letterhead paper (available from Moore, NEBS, and Uarco) will automatically generate a file copy. These forms usually come in units two to four sheets thick. You need a daisywheel or dot-matrix impact printer to produce multipart forms; the paper won't work with ink-jet, thermal, or laser printers.

Printer-Specific Paper. Other papers are made specifically for certain kinds of computer printers. There are special grades for thermal printing and specially absorbent kinds for ink-jet printers. Laser printers work well with ordinary photocopier paper, but special laser-printer paper is available for jobs requiring especially crisp images.

PAPER'S SIZE AND FORM

Paper comes in two basic types: single sheets and continuous forms. Single-sheet paper is generally of a better quality and is designed for business correspondence. However, if you don't want to manually feed single-sheet paper into the printer, you'll need a cut-sheet feeder attached to your printer.

Continuous Form. The sheets in continuous-form paper are attached end-to-end and may be separated by tearing them along the perforations. Narrow strips attached to the sides contain holes for feeding the paper through the printer. These pin-feed strips add a half-inch to each side of the sheet. Thus, 9.5-inch-wide pin-feed paper tears down to 8.5 inches. Continuous-form pin-feed paper is widely available in 9.5-by-11 inches, 8.5-by-12 inches, and 14.875-by-11 inches. Look for paper with an extra fine perforated edging, often called "micro-perf" or Keen Edge paper (a



trademark used by Rediform paper, sold through Moore), which allows sheets to separate and leave a smooth, clean edge.

Some pin-feed paper has permanent pin-feed holes along the edges. You can use these holes to file your printouts in binders.

Spreadsheet Paper. For wide printouts (14.875 inches), financial reports for example, look for paper with color bars (often green) printed across the sheet to help your eyes track data from one side of the page to the other. Several styles are available, and you should choose one that best suits your needs. One variety from Inmac and Uarco (see "Paper Suppliers") has a light blue stripe across the page that doesn't show up on photocopies.

Letterhead. If your business does a lot of correspondence, you can have your letterhead stationery and envelopes printed as continuous forms. These can be purchased by mail and are often available locally through office supply dealers and printers.

COMPUTERIZED FORMS

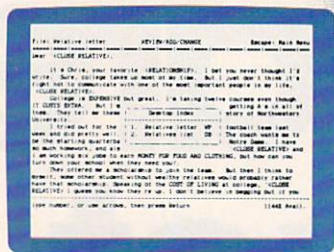
Now that your correspondence reflects the professionalism of your business, what about all the various forms that active businesses require—invoices, proposal forms, purchase orders, and payroll checks? You can gain the business look with stock preprinted forms.

Invoice/Order Forms. Review your business papers to see exactly what forms you currently use and need. Perhaps a simple multipurpose form from DFS, Deluxe, Duplex, NEBS, Rediform, or Uarco will work for you. These have an open format so that your computer can print the form titles, such as "Invoice," "Purchase Order," or "Shipping Notice" at the top. Often a single multipurpose

Contributing editor ROGER HART frequently writes about printers. His last article was "Buyer's Guide to 24-Pin Printers," which appeared in the October 1987 issue.

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software
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AppleWorks' powerful word processor has headers, footers and on-screen page breaks. Now, mail merge integrates database information with text.

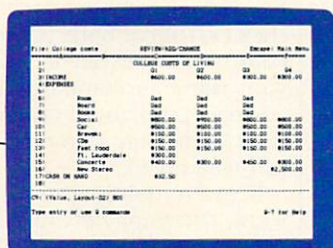
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And here we are, while the halls are still filled with the scent of new carpet, introducing a more powerful version of the best-selling Apple program in history.

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| ... | ... | ... | ... |

*Without swapping disks,
AppleWorks jumps to its
powerful spreadsheet for heavy-
duty number crunching.*



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*A few keystrokes, and you arrive at
the impressive AppleWorks' database.
Organize, file, sort and manipulate
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AppleWorks 2.0 is even better. It has extended memory support. So you can take advantage of the new power of the Apple IIGS.®

And it has mail merge capability. So you can do things like start a mail-order business in the spare bedroom.

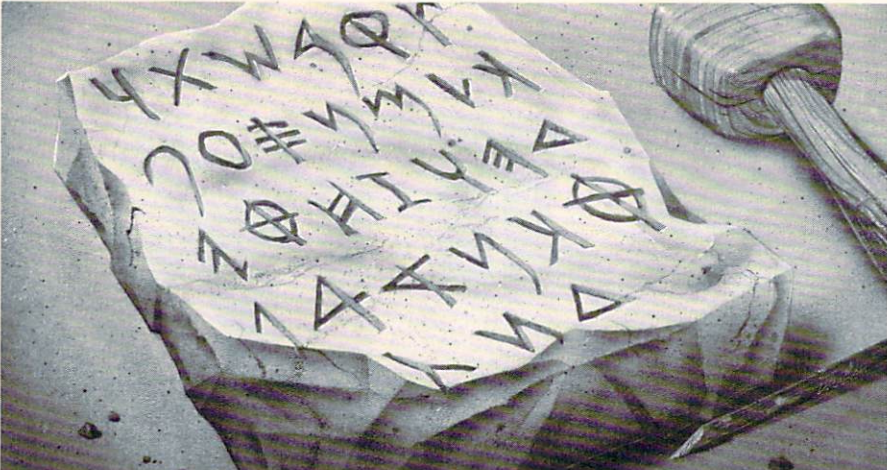
Or, take your traditional copy machine holiday letter and personalize it for thousands of very close friends. (Speaking

of personal, there's an upgrade information kit waiting for you at 800-544-8554.) But here's where things get really exciting.

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For the authorized Qume supplies dealer nearest you, call 800 54-FONTS. And don't forget to ask for the *Qume Full Family of Downloadable Soft Fonts* brochure. When you expand your desktop publishing application software with Qume soft fonts, the alphabet will never be the same! Sorry, Phoenician is not available.



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THE OFFICE AT HOME

form will serve all or most of your business needs.

Paper suppliers also offer specifically titled forms for invoices, purchase orders, and other business needs. These handy 8.5-by-7-inch forms come in single sheet or various multipart formats. Try using twin window envelopes for mailing these forms; they'll save you the chore of addressing envelopes.

Pin-feed Checks. Pin-feed checks have blank voucher areas so that they can serve both payroll and accounts payable needs. You can have your name or company name and address preprinted on the checks. Your bank may also offer preprinted pin-feed checks.

If you're using accounting software, there may be specially designed multipart pin-feed business forms available to match your software's format. DFS, NEBS, Moore, and Rediform offer preprinted accounting forms designed to receive input from many of the popular business and accounting packages, such as *Business Accounting System*, *Rags to Riches*, *DAC Easy*, *Great Plains OneWrite Plus*, *Peachtree*, *MacMoney*, and others.

HANDY ODDS AND ENDS

Besides letterhead and preprinted forms, there are many useful items that can help streamline your home-business operation. Take sealed self-mailers, for instance. As the name suggests, these come already sealed; you've probably seen them before—payroll forms, income-tax withholding statements, property-tax bills, and overdue statements. When these forms pass through the printer, carbon paper inside causes the message to appear only on the inside of the sealed mailer. You keep the outer

PAPER SUPPLIERS

Call these toll-free numbers to order catalogs from the following mail-order office-supply houses. Many catalogs include a software compatibility index, indicating which paper to use with specific software.

DFS Business Forms (800) 225-9528
Deluxe Computer Forms and Supplies (800) 328-0304; (612) 631-8500 (collect in MN)
The Drawing Board (800) 527-9530
Inmac (408) 727-1970
Moore Business Products (800) 323-6230
NEBS Computer Forms (800) 225-9550
Stationery House (800) 638-3033
UARCO (800) 435-0713; (800) 345-4335 in IL

CIRCLE READER SERVICE 24

BALLPARK PRICES

The following prices are "ballpark" figures for form paper products per 1,000 sheets. The fancier the paper or the more parts to a form, the more it will cost.

Letterhead Envelopes, \$95-\$120

Letterhead Stationery, \$75-\$120

Double-window envelopes, \$40-50

Two-part carbonless sales forms, \$70-

\$110; three-part, \$100 and up

Imprinted mailing labels, \$50

Nonprinted postcards, \$15

One-part checks, \$60-\$70

Two-part checks, \$100

Three-part checks, \$110-\$130

printed copy for your files, the other part with the message hidden inside remains closed until opened by the recipient. Such forms come in a two-way format to make replying easy.

Postcards. Consider continuous-form postcards, too, for making special announcements, offers, acknowledgements, and reminders. Most suppliers offer these postcards either in a blank style or preprinted with your firm's name or other message. Use your mailing list or database program to address the front, then set up the program again and print the message on the other side.

File Cards. Name-and-address file cards might be timesavers for you when printed from a database of important customers, suppliers, or contacts. The cards come connected in a continuous strip and are available in colors—handy for keeping customer data separate from information on prospective customers, for example. Mailing labels are a big help, too, for shipping orders to customers or mailing catalogs to people on your list of prospective customers. They come in various formats. But be aware that to print narrow file cards or labels, you need a printer that will allow the pin-feed mechanism to close tightly; some don't.

AN OVERLOOKED ACCESSORY

Paper is one of those computer accessories that people rarely think about until they want to do something special and realize they are ill equipped. All too often, people "make do" with the supplies on hand, not bothering to seek the right product for the job. But remember that your printed output is what the world sees. The wrong paper can nip a prospective deal in the bud. The right paper, on the other hand, can give your business a spark, simply and economically. ■



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¹Based on CCITT#1 Test Chart



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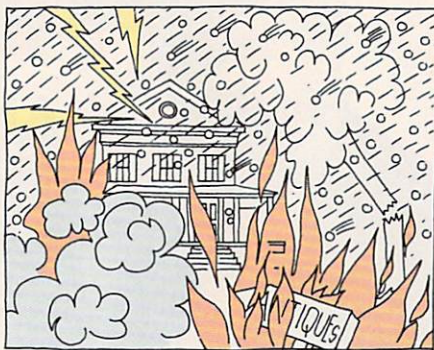
INSURANCE FOR YOUR HOME BUSINESS: PART 1

What You Need and Why You Need It **BY LIS FLEMING**

If you operate a business from your home—or if you're considering it—you should reevaluate your current insurance policy. Homeowners' policies often fall short of the needs of most home-based businesses. Moreover, the cost to you is minimal compared to the risks you take and the benefits you gain from well-thought-out coverage.

Take inventory of your home office; chances are, you have thousands of dollars invested in furniture, hardware, software, reference materials, and supplies. Is it *all* covered under your insurance? What will you do if your business is interrupted by fire, vandalism, wind, or some other peril? Or what if you suddenly become disabled and can't work, either temporarily or permanently? You probably should consider business-interruption and disability insurance.

Do you have any part-time or full-time employees? If so, think about worker's compensation, employee benefit plans, and health insurance. Do employees use their own cars to do work for you? Non-owned auto insurance covers injuries, damages, and losses sustained while employees are conducting business. If you



have a partner, you're held liable for his or her actions and debts: You'll probably want partnership insurance.

Get the picture? This article examines the limitations of homeowner's insurance for businesses and discusses ways to add riders, endorsements, and the like to existing homeowners' policies. In "Insurance for Your Home Business, Part 2," which will appear in the May issue, I'll take a look at commercial (business) insurance and such coverage as non-owned auto insurance, partnership insurance, and worker's compensation, which you should consider if you have other people working for you. I'll also give you advice for finding the right policies for your special needs.

LIMITATIONS OF HOMEOWNERS' POLICIES

Liability. Most homeowners' policies exclude business-liability cover-

age. For example, if Marilyn is a guest in your home and falls and injures herself, you're covered by your homeowner's insurance; but if she comes to your home office on business and hurts herself, you're not automatically covered by the same policy. If you can get an endorsement or rider added to your homeowner's policy to cover business operations, it will be less expensive than signing up for an additional commercial account.

Replacement of Equipment and Furnishings. You should also consider your personal computer equipment. Your homeowner's policy usually won't cover more than \$2,000—\$3,000 worth of equipment at about 80 percent of the replacement cost or at a depreciated (or cash) value. Limits can be very low. In fact, if you're using your computer for business, your policy may not cover it at all!

Here are ways to alter homeowners' insurance policies to make them more suitable for home businesses:

Endorsements. See if you can add an endorsement to cover all of your business property. Endorsements can be written for homeowners' policies to include coverage of home-business furnishings, equipment, and personal liability. One company I contacted told me that current endorsement rates are about a dollar per \$100 for personally owned com-

LIS FLEMING, a contributing editor, wrote "Accounting Software," which appeared in the February issue of FAMILY & HOME-OFFICE COMPUTING.

BASIC INSURANCE TERMS

Actual Cash Value: Value of real or personal property at the time of loss less depreciation.

All Risk: Any coverage except that specifically excluded in the policy. (Typical exclusions are earthquake and flood.)

Bailee's Coverage: Another's property for which you are financially responsible while it is in your care, custody, and control.

Coinurance Clause: Part of the insuring agreement of a policy that says the value of the property insured is equal to or greater than the percent specified (usually 80, 90, or 100 percent).

Deductible: Amount of loss the insured

must sustain before coverage is activated under policy conditions.

Employer's Liability: Legal obligation on the part of an employer to provide coverage for an employee injured on the job.

Endorsement: A change to an existing policy.

Excess and Surplus Lines: Specialty insurance carriers for risks that standard insurance carriers refuse to underwrite because of the expense (such as day-care centers and gravel haulers or kayak manufacturers.)

Excess/Umbrella Liability: Additional coverage of bodily injury or property damage as a result of your business operations (must be purchased in conjunction with

basic liability policy, in increments of \$1,000,000).

Replacement Cost: Replacement value of real or personal property at the time of loss. (May not be the same as the value at the time of purchase.)

Specific Perils: Only those perils specifically described as covered in the policy declarations (typical perils are fire, wind, hail, vandalism—theft is not included).

Substandard Insurance Company: Any insurance company with less than an "A" rating from A.M. Best's Guide. If an insurance company carries an "A" or "A+" rating, it will most likely pay its claims.

* Source: Christine A. Cooper, Insurance Services, Sacramento, California

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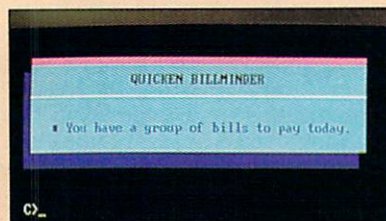
Quicken completes your financial work 5 to 8 times faster than ever before:

- Analyze budget vs. actual expenses by month for 12 months: 4 seconds
- Look up a check you wrote 1000 checks ago: 1 second
- Write and print 20 checks and update all records: 3 minutes
- Compile an itemized list of tax deductions for the year: 3 seconds

How can it be so fast? Quicken uses indexed files and speed-optimized C and assembler code—the very latest in high-speed technology.

So Automatic, It Eliminates Work.

Quicken's fully automatic "macros" eliminate repetitious clerical work. Macros



Quicken remembers the bills you forget.

remember your bills, print your checks, and update all records automatically. All you do is sign the checks.

In fact, Quicken is so automatic it reminds you to pay your bills even if you forget to use it! Simply turn on your hard disk PC, and Quicken's pop-up Billminder™ appears when you need to pay bills.

No Need to Alter Your Bookkeeping Procedures.

Quicken is easy to use because it works just like your checkbook. There's no need to change your bookkeeping format or learn anything new—no accounting jargon, no "debits," no "credits."

Quicken also comes with comprehensive on-line help, a complete manual, and free technical support.

Here's what the critics say:

"I've never seen such an easy-to-use manual or software that's so simple to use." Martin Blumenthal, in *Cider Magazine*

"Extremely simple and fast."

Esther Dyson, *Industry Analyst*

"Absolutely the best small accounting program made."

Bob Schwabach,
Universal Press Syndicate

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If you're a doctor, property manager, accountant, consultant, or manage any type of small business, and you write checks, Quicken will save you time and money starting today.

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Software Compatibility: Exports data and reports in ASCII. Also exports in Lotus® format with optional Transfer Utility.

Hardware Compatibility: All IBM® PC, AT, PS/2, and compatibles with 256K RAM and DOS 2.0 or higher. All printers. All monitors. Also available for Apple® IIe, IIc and GS with most of the same features.

Capacity: Number of bank accounts: unlimited.

Number of transactions: unlimited. Maximum amounts: \$9,999,999.99. Number of income/expense categories: 250 with 256K, thousands with 512K RAM.

Other: Not copy-protected. Checks are approved for all financial institutions in the U.S. and Canada.

Quicken **\$49.95**

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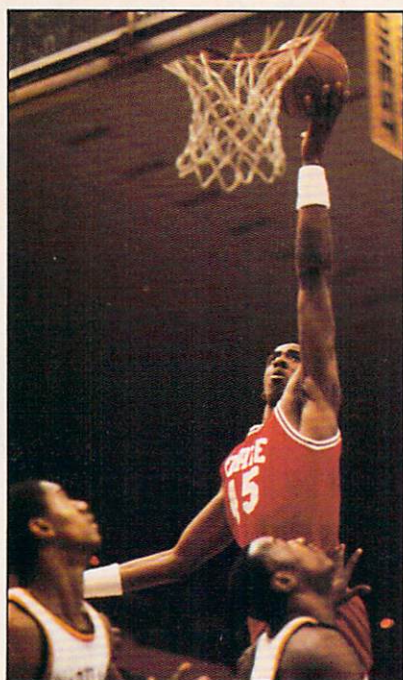
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FC488



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CIRCLE READER SERVICE 38

FINANCE

HOMEOWNER'S INSURANCE COVERAGE

GENERALLY COVERED

ITEMS

- The dwelling itself
- Common household furnishings and other goods
- Cost of temporary lodging if dwelling is uninhabitable

HAZARDS

- Fire (including lightning)
- Windstorm
- Hail
- Explosions
- Riots
- Crashing vehicles or aircraft
- Smoke
- Vandalism
- Breakage of windows
- Falling trees

LIABILITY—ON YOUR PROPERTY

- You directly injure another person
- Someone is injured through your negligence
- You damage someone's belongings

LIABILITY—OFF YOUR PREMISES

- Injury to another person if you're found to be negligent

OFTEN NOT COVERED

ITEMS

- Precious metals, jewelry, paintings, silver, furs, and valuable collectibles (either not covered, not adequately covered, or coverage limited to as little as \$100)
- Goods held for sale
- Pets
- Furnishings and equipment used for business

HAZARDS

- Floods
- Earthquakes
- Nuclear explosions
- Radiation
- Smoke from fireplaces
- Freezing (frozen pipes, for instance) if the dwelling is vacant (no people) or unoccupied (no furniture) and the pipes haven't been drained or reasonable diligence exercised to keep the dwelling heated

LIABILITY—ON YOUR PROPERTY

- None for injury related to business
- None for injury related to business negligence
- None for property damage if related to business

LIABILITY—OFF YOUR PREMISES

- None for injury related to business
- *Source: NOLO, Winter 1987

puters and software and two dollars per \$100 for data. However, you may have to find a new carrier if yours won't write an endorsement for a home-based business.

Equipment Coverage. Separate "floater" policies are also available for such items as furniture and hardware. And you may want electronic-data-processing insurance (EDP), which will cover damage to hardware and software caused by power surges or other electrical problems. Cost for an EDP floater depends on your state of residence; Fireman's Fund Insurance Companies is currently charging about \$2.25 per \$1,000 worth of equipment in California.

Computer Insurance Policies. There are also special computer insurance policies that protect your computer equipment whether it's in your office, in your auto, or at a temporary location. One insurance company I contacted (SAFEWARE, which is underwritten by Central National Insurance Company of Omaha) says that annual costs range from \$39 to \$129 after a \$50 deduction.

Crime Coverage. Theft is not covered by other kinds of commercial insurance coverage. Separate policies are available to cover unlawful acts, such as burglary. Your merchandise, inventory, or other business property is protected up to the limit of your policy. Theft coverage does not apply to money and securities, but you can get separate policies for limited amounts.

MANAGING RISKS

Whether or not you have to spend a lot more money on insurance depends on the items you choose to insure and the risks you're willing to take. Maybe you just have to add a few endorsements to your present homeowner's insurance policy. But you may need a separate (and more expensive) commercial policy, which we'll discuss in more detail next month.

Taking risks is what entrepreneurs do. And managing risks is what successful entrepreneurs do. You can begin managing risks by reviewing your insurance needs with your broker or agent. ■

Now from NRI comes the first course of its kind . . . anywhere!

Learn to use, program, and service today's digital electronic music equipment as you build your own computer-controlled music center



Now NRI puts you at the heart of the most exciting application of digital technology to date! With NRI's new at-home training in Electronic Music Technology, you get hands-on experience with the equipment that's revolutionizing the music industry—Atari ST Series computer with built-in MIDI ports, Casio CZ101 digital synthesizer with advanced MIDI capabilities, and ingenious MIDI software that links computer keyboard to synthesizer keyboard—all yours to train with and keep.

This year, over \$1.5 billion worth of digital electronic music instruments—keyboards, guitars, drum machines, and related equipment—will be sold in the U.S. alone. Who's buying this new-tech equipment? Not just progressive musicians and professional recording technicians, but also thousands of people who have never touched a musical instrument before. And there's good reason why.

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Now NRI's breakthrough Electronic Music Technology course puts you at the forefront of this booming new technology with exclusive hands-on training built around a MIDI-equipped computer, MIDI synthesizer, and MIDI software you keep.

Dynamic New Technology Opens Up New Career Opportunities for You

The opportunities are unlimited for the person who's trained to take advantage of today's electronic music phenomenon. Now you can prepare for a high-paying career as a studio technician,

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The Atari ST Series computer included in your course becomes the heart of your own computer-controlled music center. With its tremendous power, superior graphics capabilities, and built-in MIDI interface, the 16/32-bit Atari ST has almost overnight become the computer of choice for today's most knowledgeable electronic musicians.

The Casio CZ101 digital synthesizer, also included in your training, is the perfect complement to your Atari ST. The polyphonic, multitimbral CZ101—which stores up to 32 voices internally—"communicates" with your ST computer through MIDI, bringing life to virtually any sound you can imagine.

Plus, you get ingeniously designed MIDI software that opens up amazing new creative and technical possibilities . . . you actually build your own 4-input audio mixer/amplifier . . . and you test the electronic circuits at the core of today's new-tech equipment with the hand-held digital multi-meter included in your course.

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to take advantage of today's opportunities in electronic music technology.

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TELECOMPUTING

PRODIGY

n, 1. a: an extraordinary, marvelous, or unusual accomplishment, deed, or event; b: a highly talented child 2: a new information service with style

BY STEPHEN MILLER

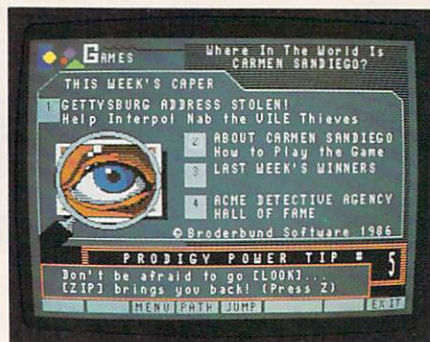
When was the last time you were on-line and saw a red and yellow cartoon character dance across the screen? Or read a personal reply from Howard Cosell in your electronic mailbox? Chances are that, unless you've been staring at your computer screen too long, colorful characters and comments from Cosell are not regular features of your on-line information service. The Prodigy Interactive Personal Service, however, has many such innovations to delight the seasoned telecommunicator and tempt the newcomer on-line.

Prodigy, the brainchild database/electronic-shopping service from Trintex (an IBM and Sears joint venture), is still in its infancy but has begun to take important first steps into the commercial world. The version we previewed is currently being tested in Hartford, Connecticut, and White Plains, New York. It will be available in several other cities, including Atlanta and San Francisco, this year. What Trintex hopes to deliver is a personalized information service that computer users can rely on for much of their information, entertainment, home-banking, and shopping needs.

TRINTEX SIMPLEX

From what we saw of Prodigy, the system seemed very user friendly. The software, which requires a graphics-equipped MS-DOS computer with at least 512K and a 1200-baud modem, does all of the dialing and logging on to the system for you. All you have to do is type in a password and—*presto!*—you're on-line. A Macintosh version is almost ready, and Trintex will probably support the Apple II series of computers in the future.

Contributing editor STEPHEN MILLER, who writes the Tandy column in Machine Specifics, wrote the "MS-DOS Hard-Disk User's Guide" in the March issue.



The Prodigy version of *Where in the World Is Carmen Sandiego?*

Unlike most text-based services, each Prodigy screen combines an eye-pleasing display of text, graphics, and color (provided you have a color monitor). Harry Smith, Trintex's senior vice president of commercial marketing, says that much time and thought went into designing Prodigy's look to ensure consistency in screen display and function. Because of the clarity of its visual display, the company feels that customers will be able to use Prodigy with minimal instructions. Smith stresses that the service is designed to give users the kind of control that other services can't match. We, in fact, found Prodigy very easy to follow. A command bar at the bottom of each screen helped us navigate through the system, and even the manual that will come with the software wasn't needed.

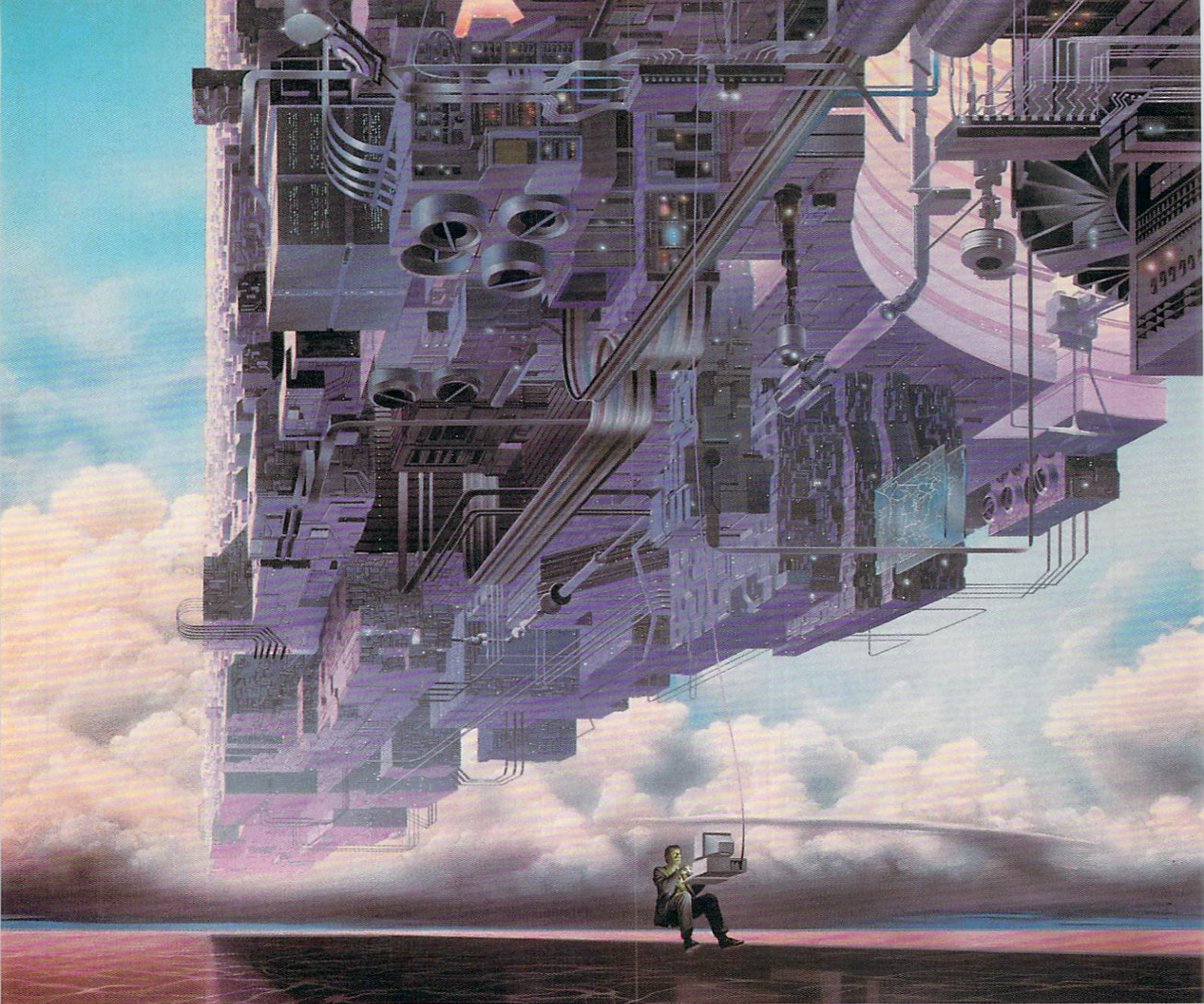
The version we saw of Prodigy works on a mnemonic menu system (type N for next, M for menu, H for help, and so forth) and uses a "city of buildings" as the visual device to provide a familiar navigation tool. On the opening menu, each building is numbered to correspond to its function, such as lifestyle, shopping, or financial. When you select a building, you then see a directory of each "floor." Once on a floor, you can move to the various shops or services offered. For example, in the

building that houses the news and information areas, you can choose to read headlines, stock quotes, and weather reports. The weather section displays full-color maps with such requested weather information as current temperatures from cities across the country or ski reports for specific regions. From the user's viewpoint, it's all very logically and simply arranged. The only drawback is that the graphics can slow the system down if you're working with the minimum memory requirement.

HIGHLIGHTS—FROM SNICKERS TO STARS

One service that Trintex hopes will lure subscribers is Prodigy's Ask the Experts. There are currently about 30 well-known experts in various fields who will offer bits of advice and entertain questions from users. Some of the experts include Jane Fonda on fitness, lifestyle, and nutrition; Liz Smith and Marilyn Beck with society and Hollywood gossip; movie reviews from Gene Siskel; Sylvia Porter on finance; Heloise on household tips; sports from Howard Cosell; and Jack Germond and Robert Novak with opposing views on politics. The plan is for the experts to provide you with answers to your questions within 72 hours. For example, if you're planning a trip to Atlanta, you can ask restaurant reviewer John Mariani where to go for a \$20-\$30 seafood dinner. The reply will be in your private mailbox in a few days. (If you need it right away, you're out of luck unless Trintex adds an in-depth restaurant database.) An extensive electronic mail system will also enable users to communicate with each other.

The Fun House entertainment section will be a place to visit for an afternoon chuckle, to check up on the latest developments of the on-line fiction (the stories can really leave you hanging), or to play an in-



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TELECOMPUTING

teractive game. Jokes and trivia questions are complete with whimsical graphics, and several adventure games and simulations have been specially adapted to maximize Prodigy's format. For example, a business simulation from Reality Technologies becomes a multiplayer event of cutthroat corporate strategy as each player acts as CEO of his or her own company. Prodigy's version of Broderbund's popular *Where in the World Is Carmen Sandiego?* adds richer graphics, more in-depth cases, and an element of competition among sleuth-players.

PRICE IS RIGHT

Prodigy's pricing policy is sure to set it apart from other information services. Prodigy will be available for a flat monthly fee. "It is based on the same idea as the fees charged for basic cable television service," explained Smith. Basic cable service in most cities is less than \$15 per month. The flat rate will allow unlimited access to Prodigy with no restrictions on the number of log-ons or time spent on the system. The company is able to do this because, similar to cable and broadcast TV, there will be commercial advertisements to help pay the bills. (This pricing strategy may have come from a former partner in this venture, CBS.) Sponsors have access to two types of advertisements. One is a two- to four-line message that is displayed at the bottom of the screen during normal system use. If one of these messages catches your eye, you can view the entire "commercial." If the product advertised is something that you would be interested in buying, you can order on-line. The companies also buy "space" in the "malls" and other shopping areas of Prodigy.

Nearly 70 companies have already signed up to advertise with Prodigy. They include financial institutions, investment firms, real-estate companies, car companies, clothing stores, computer dealers, software publishers, airlines, and travel agents. Each company can have pages and pages of product listings through which you can browse in the same way that you would leaf through a catalog. You can place your order immediately and receive confirmation of the order while on-line. The range of products and services offered are endless—up to and including grocer-

ies. As the service grows, more companies will be added. If Prodigy expands as planned, there isn't anything that you won't be able to order from the comfort of your own home.

A PERSONAL FAVORITE

Another feature that differentiates Prodigy from other services is its capability to be customized. Each user can set up a Path, which might be compared to a table of contents. This Path allows users to visit up to 12 Prodigy locations in a preselected order. For example, if you like to read the news and check the weather every morning while waiting for your teapot to whistle, you can set up a Path that automatically takes you to these two locations first. The rest of your path could consist of other frequent stops in your daily routine, and you may stray from your Path anytime you wish.

Advertisements can also be targeted to the individual user. When you sign up for the service, you can opt to give details about your age, sex, and hobbies, for instance, so that the commercials you see will be more targeted to you. You may, however, prefer to see all of the ads. But if you don't like being bombarded with commercials, you'll have to adjust.

The service may not meet everyone's on-line needs. Right now, it lacks the depth that other services can offer and will have to include more extensive databases before people consider it a serious source of information. If you need "The Wall Street Journal," you may be disappointed with the front page of "USA Today."

Prodigy is a long way from being the household service that Trintex imagines it will be, but the company is spending lots of money on research and development. The service is growing and changing daily. If Prodigy delivers on its promises of ease of use and great value for the dollar, more and more people may incorporate on-line communication into their lifestyles. ■

FIND FAMILY & HOME-OFFICE COMPUTING ON-LINE

FAMILY & HOME-OFFICE COMPUTING has taken up residence in section 10 of the *Work From Home Forum (GO WORK)* on CompuServe. We will also be participating in the *Prodigy Interactive Personal Service*.

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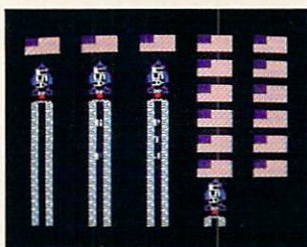
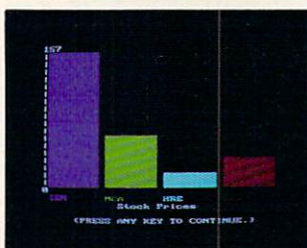
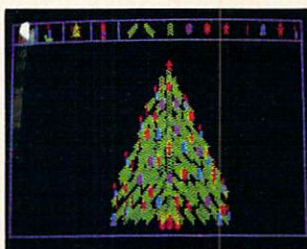
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APPLE

BY CHARLES H. GAJEWAY

APPLE II

At MacWorld Expo in San Francisco in January, Apple introduced its new Apple MIDI Interface (\$99), the industry-standard device for connecting computers to synthesizers and musical keyboards. The interface connects to serial ports on both the Macintosh and Apple IIGs. The small plug-in unit is compatible with most MIDI software for the Mac. Apple expects Macintosh MIDI users primarily will be musicians and hobbyists and IIGs users to more likely be students.

Even without the MIDI interface, you can make good music on the IIGs, thanks to Electronic Arts. The company's *Music Construction Set* lets you compose music. *Instant Music* lets you play music; it uses artificial intelligence to ensure that you never play a note in the wrong key or rhythm. Rounding out the set is *Hot 'n Cool Jazz* and *It's Only Rock 'n Roll* (both to be used with *Instant Music*).

New GS Software. Besides the music products, there's a veritable wave of software coming out to support the once-enigmatic IIGs. The latest product sheet from Apple lists 82 new programs or updates of existing programs for the GS and 19 hardware and accessory products. Apple dealers should have a copy of this ever-growing list, should you wish to examine it.

One of the newest releases is *MultiScribe GS 3.0* (StyleWare;

\$99.95). This popular program offers a Mac-like operating style with pull-down menus and the capability to include graphics with text. This newest release offers a truly advanced spelling checker and thesaurus as well as new operating features. StyleWare also released *Font Library* (\$39.95), a collection of 40 new font families compatible with all GS-specific software.

Ultimate AppleWorks Accessory.

Roger Wagner, the old master of the Apple II, has created *SoftSwitch* (\$59.95), a utility that requires a minimum of 512K and allows you to load up to three programs simultaneously and switch among them. This may be the ultimate *AppleWorks* accessory! (See review in this issue's *Software Guide*.)

United Software, vendor of the venerable *ASCII Express*, is selling *MouseTalk* (\$99.95), a high-performance telecommunications program that makes good use of the GS mouse.

MicroSPARC, Inc. offers *LifeGuard* (\$59.95), a program that recovers accidentally deleted ProDOS files. It also offers a powerful search feature for locating "lost" files, especially useful with a hard disk.

MACINTOSH

Apple has revamped its LaserWriter printer line, replacing old LaserWriter models with a new family of LaserWriter II printers. Based on the new Canon SX printing "engine" (as is the Hewlett-Packard LaserJet Series II), the new printers are smaller and lighter and offer increased performance.

A big improvement is the face-down output that stops the reverse-order annoyance of the original "faceup" LaserWriter. The new printers also have blacker print, a larger printing area, and longer toner cartridge life. In addition, the manual feed slot is now adjustable to handle envelopes, and there's an envelope tray available for even easier addressing chores.

Three LaserWriter IIs. The LaserWriter II is available in three models. Because of the printers' modular construction, each model can be up-

graded to another model as your needs—and budget—dictate.

The least expensive unit is the SC (\$2,799). Equipped with a 7.45MHz 68000 processor, an SCSI interface, and four font families, the SC is a single-user machine that offers basic laser-quality text and graphics. It does not support PostScript, the page-description language that makes the standard LaserWriter hum. The SC requires a Macintosh with at least 1MB of RAM.

Next in the line is the NT (\$4,599), equipped with a 12MHz 68000, 2MB of RAM, and 11 font families. With an AppleTalk network port and Diablo emulation, the NT is equivalent to the LaserWriter Plus in performance and flexibility, though perhaps it's a little faster.

The NTX (\$6,599) takes the LaserWriter to new levels of performance with a superfast 16.67MHz 68020 processor, up to 12MB of RAM (it comes with 2MB), and both an expansion slot for additional resident fonts and an SCSI port to attach a hard-disk drive for additional font storage. The NTX offers performance and flexibility to match the Mac II's speed and power and is primarily for heavy corporate users or professional typesetters who need access to a range of fonts at all times.

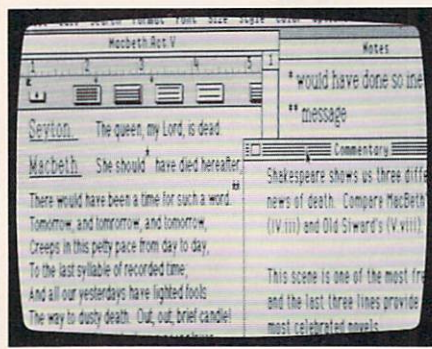
CHARLES H. GAJEWAY can be reached on CompuServe (ID: 73357.3577) or on GENie (ID: C GAJEWAY).

ATARI

BY MATTHEW STERN

The long-awaited Mega 2 ST (\$1,700, monochrome; \$1,900, color) and Mega 4 ST (\$2,400, monochrome; \$2,600, color) have shipped, as has the Atari laser printer (\$2,000), according to Atari. And *Microsoft Write* (\$175), the word processor that shows fonts on-screen, finally reached dealers' shelves. It's one of two ST word processors from a "big name" developer.

WordPerfect for ST. Also on the rack is *WordPerfect* (WordPerfect Corp.), the ST version of the popular



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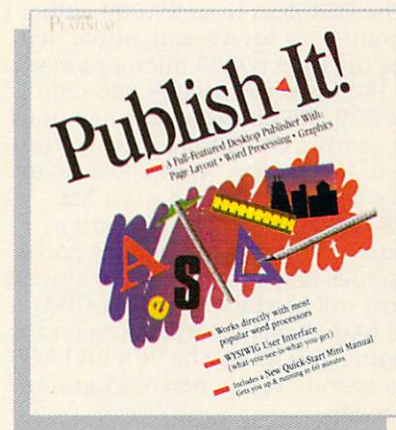
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MACHINE SPECIFICS

program that already runs on the 512K Amiga, 128K Apple II, 256K IBM PC, and 512K Macintosh. If you've used *WordPerfect Version 4.2* on the IBM PC, you'll find the familiar function key commands, macros, and powerful formatting features in the ST version. *WordPerfect* for the 512K ST takes advantage of GEM's drop-down menus and dialog boxes, but users of traditional point-and-click programs may find the six-disk package a little intimidating. The suggested retail price of \$395 may be intimidating too.

When Will Atari Deliver? It seems as if everyone is building a PC-compatible computer these days. Even a tennis-racquet manufacturer has a PC clone in the works. So, it's not surprising that Atari has announced a new line of PC-compatible computers before it's even delivered the ones announced last year!

The new line of—dare we say it?—vaporware includes the PC2 (less than \$1,000 without a monitor), an XT clone that runs at two speeds. Unlike the Atari PC announced last year, the PC2 has four internal expansion slots. The computer can be fitted with 3.5-inch or 5.25-inch disk drives.

The PC4 (less than \$2,000 without a monitor) is an AT-compatible that uses the Intel 80286 microprocessor; the PC5 uses the Intel 80386 chip. The PC5 will be available when Atari can acquire chips from Intel, according to Neil Harris, Atari spokesman.

It's promised that all Atari MS-DOS computers will come with a mouse and serial and parallel ports. Graphics chips built into the system board will produce Hercules, CGA, and EGA displays (depending on the monitor you buy). The PC4 and PC5 also operate in the new VGA graphics mode.

Don't Leave Home Without an Atari. At last, there's a line of Ataris you can carry around in your wallet or briefcase. A new line of calculators sport the Atari logo. The calculators are made by Hartech, Ltd., a Scottsdale, Arizona, firm—run by former Atari executive David Harris—which licensed the Atari name.

Atari calculators range from the credit-card sized Artcarte line to full-featured desktop models with printing and memory capabilities. Solar and battery-powered models are available. Prices start at \$5.95.

MATTHEW STERN can be reached on CompuServe (ID: 73547, 2420).

COMMODORE

BY SHAY ADDAMS

Not long ago I railed against programmers for not taking advantage of the C 128's extra memory and other features. Steven Douglas probably didn't even see the column, but he has written a new version of *PaperClip* (Electronic Arts) for the 128, setting an example (and perhaps sparking a trend?) for other programmers.

Naturally, *PaperClip III* uses the 128's extra memory to handle documents twice as large as the 64 version, and it's also compatible with the 1750 RAM cartridge for those working with even larger files. The 128 program also kicks the 1571 drive into "burst mode," allowing rapid data transfer across the serial port. In burst mode you can load and save files at least four times faster than usual with the 1571.

Business users will appreciate the 80-column display and the built-in 40,000-word spelling checker that can run in an interactive mode if you have a 1750 RAM card. Downloaded files may be instantly reformatted with the 128 version, a process much faster than ripping out those carriage-return markers one by one. And both versions (both 64 and 128 disks come in the same package) offer a slick telecommunications program that's accessible from within the word processor.

MS-DOS Switch. Commodore is phasing out the PC 10-II, its IBM XT clone, and bringing in an enhanced, less expensive model, unofficially referred to as the PC 10-III, or Colt. The PC 10-III is a dealer model that will be available in several different configurations, and the Colt is a package that will be marketed in such stores as K-Mart. The new design has a pair of 5.25-inch floppies, built-in color graphics, built-in serial and communication ports, three open slots, mouse support, and a type of built-in disk controller that will support upcoming hard-disk drives from Commodore. The PC 10-III will have three processor speeds (4.77, 7.1, and 9.54 MHz), and an AT-style keyboard with a large ENTER key and a cursor pad. The Colt may have only two speeds and may not come with the new keyboard design. There isn't a firm price yet, but each configuration should sell for less than \$1,000. The Colt should be

available this month, and the PC 10 III in the summer.

Commodore 80386? If the 10-III isn't fast enough for you, hold on a few months: last November Commodore previewed an 80386-chip machine called the PC 60/40 that rips along at 16MHz.

(Notice the names of Commodore's MS-DOS machines; it's not enough that they can run IBM software—the computers' names have to be as confusing as IBM's various models. One of these days someone's going to walk out of a store with the wrong computer!)

SHAY ADDAMS, editor and publisher of *Questbusters*, an adventure-game newsletter, can be reached on CompuServe (ID: 72267.601) or on QuantumLink (ID: JBCALMER).

IBM

BY HENRY BEECHHOLD

Having developed the desktop-publishing SolutionPac—including Aldus's *PageMaker* and IBM's own Laser Printer—IBM is cranking out new software packages aimed at vertical markets. It now offers SolutionPacs in accounting, typing, software engineering, retail operations, drafting and design, legal- and medical-office operation, construction, and more. Beyond this, IBM is particularly anxious to situate itself strongly at all levels of education, both in the classroom and in educational management. IBM's new software division, formed last year, is obviously making a big effort to earn its keep.

Making Connections. You'd like to access a computer that wants to talk to, say, a DEC VT100 terminal. But you've got a plain old IBM PC. Softronics's *Instant Terminal* (\$95; \$50 for each additional emulation) will turn your computer into the terminal of your choice. At the same time, it provides a complete communications system. You can quickly set up (and change) your dial-up list and communications parameters through the full-screen dialer display. The program is a snap to use. The tutorial and reference manuals should answer all of your questions.

The same company offers a more expensive program called *Softterm PC* (\$195), which gives you instant access to more than 40 different terminal emulations, as well as local area

network (LAN) support, concurrent background operation, security log-on and callback, job-queue management, and almost every other telecommunications feature you would want to connect to the mainframe world.

Making Indexes. Making an index used to be a royal pain. Some of the more recent and expensive word processors come with built-in indexing systems, but you needn't invest big bucks to take advantage of computerized indexing. *Proindex* (Elfring Consulting, Inc.; \$89.95) and *The Index Program* (DL Data; \$39.95, shareware) are two indexing programs that can be used with any ASCII word-processing file.

Proindex comes in a slick package and includes a printed manual. *The Index Program* provides a manual on disk.

Each program works by matching a list of keywords or phrases (your choice) against the file you wish to index. The entries can be alphabetized and assigned page numbers. Although both programs work similarly, *Proindex* includes routines for extracting a sorted list of "unique" words, from the original text file, that you can use as a source for creating the index.

HENRY F. BEECHHOLD is author of *The Brady Guide to Microcomputer Troubleshooting & Maintenance* (Brady Books, Prentice Hall Press, New York).

MS-DOS

BY STEVE MORGENSTERN

Send in those software registration cards! They may look just like the cards you routinely toss out when you buy a new coffee maker, but in the computer business, the warranty card is often a lifeline between the purchaser and company.

Of course, being a registered user entitles you to some level of service if you have trouble with the software. But the benefits of registration extend beyond service to include preferred treatment when a company offers a new version of a product.

Think about it—what other industry offers bargain prices to current owners when it introduces a new model? It happens in the computer industry routinely, even when the new product is a major change from the previous edition.

PageMaker 3.0. *PageMaker 3.0* is a good example. Due out soon, this new version represents a very substantial upgrade. It handles long documents better, has automatic text-wrap around graphics (about time!), features better image control, and sports new color capabilities. A selection of design templates will be included, and an optional font-generator (\$50) is also available for Hewlett-Packard LaserJet printers. The list price for version 3.0 is \$795. Registered owners of editions purchased after November 2, 1987, will pay only \$15. That strikes me as more than fair.

Borland's Turbo Technix. Borland is another company that goes out of its way to serve its customers. As a registered owner of Borland programming-language products, I recently received my first issue of *Turbo Technix*, a 160-page glossy magazine packed with programming tips and tutorials. The company is giving away 12-month subscriptions of the bimonthly publication to registered owners of its programming languages, spreadsheets, and databases.

Another surprise from Borland was an introductory offer for *Quattro*, the company's powerful new spreadsheet (see review in the *March* issue). Borland customers received offers to buy *Quattro* for \$75, for a limited time. The list price is \$195, and even mail-order discount houses charge more than \$100.

The list could go on and on—free newsletters from Aldus, Electronic Arts, and Microsoft; inexpensive upgrade offers for *Microsoft Windows 2.0* and *XyWrite III Plus*; and much, much more.

STEVE MORGENSTERN can be reached on CompuServe (ID: 72545,606).

TANDY

BY STEPHEN MILLER

As software becomes easier to use but more demanding on the computer hardware, the need for speed becomes a concern for owners of older Tandy MS-DOS machines. A 7.16MHz Tandy 1000, which seemed so speedy a year ago, seems a slowpoke now compared to a 286 machine at the same clock speed. If speed is of concern and you have an

older 1000 (except for the EX), you can upgrade your processor with the 286 Express card (cat. #25-1035; \$400). The card will not turn your 1000 into an AT-class computer, but it will boost its processing power.

Programs that do calculations (such as spreadsheets, databases, and most money-management programs) will show, in most cases, noticeable increases in speed. If you have one of the original Tandy 1000s, you'll have to also purchase a "daughter card" (cat. #AXX-7130; \$40) so that you can switch between the 8088 mode and the faster 80286 mode. The 286 Express is in demand, so check with your local dealer to see if it must be back ordered. Just so there is no confusion, the accelerator card will not allow you to run OS/2. For that you need a full-fledged 286 machine, such as the Tandy 3000.

Multi-Vue for CoCo 3. At long last, *Multi-Vue* for the CoCo 3 and OS-9 Level Two is finally available. *Multi-Vue* uses the power of the operating system—without requiring you to know the ins and outs of OS-9. It could be compared to the same technique made popular by the Macintosh, *DeskMate*, and the unreleased OS/2 *Presentation Manager*.

Sales of CoCo 3's have apparently been quite good, but the real power of the machine has not been harnessed yet by third-party developers, and many novice users have not made the switch to OS-9 because it's not the easiest system to learn. *Multi-Vue* should make OS-9 more accessible and that should spur some new software development.

STEPHEN MILLER is a computer consultant and journalist.

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EDUCATION

DO COMPUTER SKILLS MAKE COLLEGE GRADS MORE MARKETABLE? Educators, Recruiters, and Students Offer Their Views **BY JACK HAYES**

In the mid 1980s when schools like Drexel, Carnegie Mellon University, and Stevens Institute of Technology began introducing undergraduates to microcomputers, the assumption was that computer skills could make students more productive and thus more desirable job candidates. It didn't matter whether they were art, science, or business majors.

Although there's no statistical proof yet that the world's problems are going to be better solved by students with computer skills, those early assumptions about personal computers in the undergraduate environment have changed little. In fact, microcomputer momentum is gaining force on America's campuses.

COMPUTER USE ON CAMPUSES GROWS

Students spent more than \$1 billion last year on personal computer products, and colleges spent another \$800 million, according to a report in the June 1987 *Chronicle of Higher Education*. And these numbers are likely to grow. Hardware and software companies look at colleges and their students as underdeveloped markets with enormous potential. The report said that companies will continue selling directly to students at large discounts while studying other ways to enhance their campus penetration.

One indication of the growth of computer use at the college level is the increase in course-related applications. Software is now being developed at a faster rate and is of a better quality than before. At many colleges, faculty are designing software for courses where none existed previously. In the philosophy department at Carnegie Mellon, for example, a new program gives students self-paced instruction in symbolic logic.

OPINIONS ON THE "EXPERIMENT" VARY

Colleges have advanced beyond wondering if computers belong on



their campuses. According to Kimberly Wiley, a director at the EDUCOM Consulting Group in Princeton, New Jersey, it's now a question of *how*. Do you put them in the dormitories or the libraries? Do you give one to each student or set them up in clusters around the campus?

Because there's no statistical validation for the computer as a teaching tool, schools requiring personal computer access or ownership admit they're engaged in what amounts to mighty expensive experiments. But, says Wiley, "The colleges feel they're enhancing their students' learning by offering tools they didn't have before."

The range of hot and cold opinions on computer literacy is remarkable—as expressed by the companies who hire from campuses. After the first large personal computer projects were announced five to six years ago, campus recruiters began converging on the hottest schools like football talent scouts—all in search of top-round draft picks to fill their entry-level quotas. Yet much of that early corporate enthusiasm appears to have settled.

Though they won't readily admit it, the majority of campus recruiters for non-computer related jobs only look at computer skills when there's a choice among candidates who otherwise are alike in academics, leadership, and personality. "In general, we just don't consider computer lit-

eracy a key hiring criterion," says a recruiting manager with one of the large accounting firms. "But when we're down to a decision over this person or that one, personal computer skills can mean something," she adds.

Even Apple Computer, a company that's gearing up for more business in the college market, ranks computer literacy below experience, leadership skills, and personality as a substantial hiring criterion—particularly for the human-resource type jobs. Explains Apple's college relations coordinator Lynne Capener, "It takes only an afternoon on the average personal computer to acquire many of the necessary skills."

Clarkson University's dean of educational computing, David Bray, maintains that recruiters will always pursue the smart, well-rounded kids. "But it helps if they've been introduced to problem-solving on a

LIBERAL ARTS STUDENTS WITH PERSONAL COMPUTER SKILLS ARE FINDING BETTER JOBS WITH HIGHER PAY.

personal computer. We feel that the computer's presence on campus is a plus, but there's nothing statistical to measure. All we can go by is jobs, and this wasn't a good year for jobs."

So why such hype over integrating the computer onto campus if some recruiters aren't sold on its necessity? The answer is that *some* companies apparently are sold. And there's growing evidence that students—particularly liberal arts students—with personal computer applications skills are finding better jobs with higher pay. On the campuses with computers, there's a majority opinion that the quality of learning has improved.

The strongest evidence that computer-savvy graduates are going somewhere in the job market comes

JACK HAYES, an insurance underwriter in Atlanta, Georgia, frequently writes about computers.

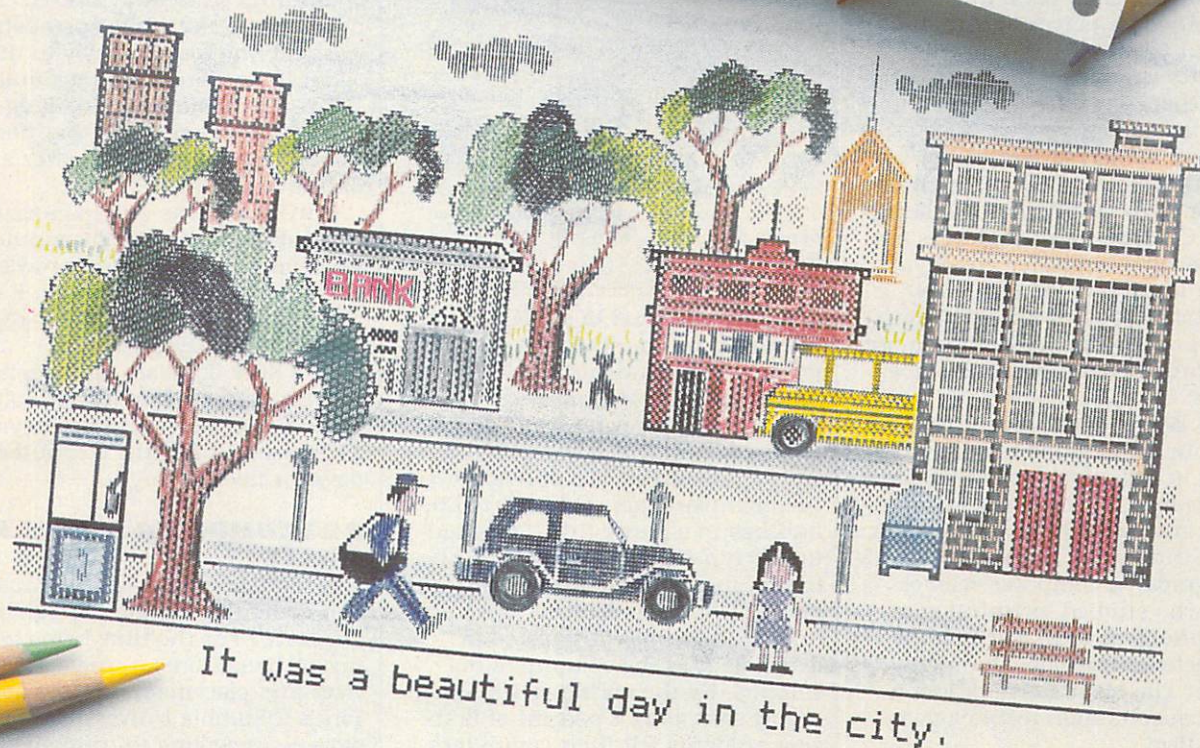
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from an informal research study done by Barbara Kurshan, former director of academic computing at Hollands College, a tiny women's liberal arts institution in Roanoke, Virginia. Kurshan surveyed a cross section of students including approximately 100 who had taken two or more computer courses during their careers at Hollands.

She found that about 70 percent of the students who had taken computer courses were using computers frequently in their jobs. In general, these students perceived that they got their jobs as a result of their computer experience. They also perceived that they were paid more for the same reason.

Burton Nadler, former career advisor at Dartmouth College and now director of recruiting for a Washington, D.C., firm, says employers are impressed by computer literacy. "It's had an impact on job eligibility. Even the leave-term (cooperative semester) employers are looking more and more at computer confidence," he says.

Adds Bray, "In the junior year when our undergrads begin their semester in industry, they know more about computers than the average college graduate does." Bray recalls a special thrill when one of Clarkson's undergrads—a computer science major who studied technical communications as well—became the first bachelor-level job candidate hired at The Mitre Corporation, a Massachusetts high-technology research firm.

POSITIVE PROOF

Beyond the anecdotes about placement success, there's a belief by most of the campus population at computer-equipped schools that the machines have inspired a rededication to learning. Dr. Joan McCord, a sociologist at Temple University, was

WHAT IS COMPUTER LITERACY?

Computer literacy is a grossly misunderstood term, says Dartmouth's Burton Nadler, associate director of career and employment services. He says students who start using computers become *confident*, *literate*, and then *competent* with the machines—in that order.

The first level, **confidence**, comes when a student no longer fears the computer. It entails the ability to push the ON button, follow the prompts, and get some work done.

Literacy comes with programming and/or applications skills. It's the ability to pop in and begin working with a piece of software you've never used before.

Competence, the most desired of the three, is, according to Nadler, a few levels beyond literacy. A computer-competent student sees the machine's productive benefit and wants to use it for everything.

teaching at Drexel in 1983 when the university announced that all incoming first-year students would have access to Apple Macintoshes.

In the only known longitudinal study of its kind, McCord looked at the impact of Drexel's decision over the next two years and reported her findings in a paper titled "Computing: Is It a Better Mousetrap?" She found, in general, that students and faculty felt more efficient, more productive, and more interested in learning after the computers hit campus. By the spring of 1985, her report said, only 8 percent of first-year students felt their computers hadn't added value to their courses.

A yet unpublished study done at Stevens Institute turned up the same positive evidence. Sophomores in nonengineering majors used their computers an average of 8 hours a week—in addition to the 18 hours they spent in class, according to Dr. Joseph Moeller, associate provost for

computing and information systems. "Our goal was to get students to turn naturally to the computer—and the faculty feels we've done this for most of them," he says.

The idea that personal computers eliminate the drudgery of work in applications such as word processing and spreadsheet analysis suggests that students are then free to reach toward higher levels of learning. One of many who support this theory is Dr. Jan Biros, director of computing services at Drexel. "Students using electronic spreadsheets are climbing more quickly to the 'what if' questions. Using simulations, they're now making judgments. These are skills that normally wouldn't develop until after a year on the job."

Biros discounts criticism that 90 percent of the personal computer work on campus is word processing. "That's not a criticism at all. Especially when we're using it as a tool to teach writing. English majors at Drexel have database, spreadsheet, and programming language software. But even if word processing is all they use it for, the computer still pays for itself."

ARE COMPUTER SKILLS A MUST?

Is there still hope for the capable non-computer-literate, liberal arts graduate? For the time being, yes, says Athena Constantine, career services and placement director at New York's Columbia University. "Employers are willing to train good applicants, but first they want to measure skills and aptitude."

Back to the original question: Do computer skills make college graduates more marketable? Ronald Kutscher, associate commissioner with the U.S. Bureau of Labor Statistics, believes the reply "I know how to use a computer" will be less of a bargaining point for job candidates in the future as more and more applicants gain computer knowledge. But he says that this point won't be reached unless computers become more accessible and easier to use. Stevens Institute's Moeller admits colleges are still just touching the tip of the iceberg as far as integrating personal computers into courses. "But with students now figuring out how to run problem calculations in six minutes instead of six months—I'd say there's all the proof you need!" ■

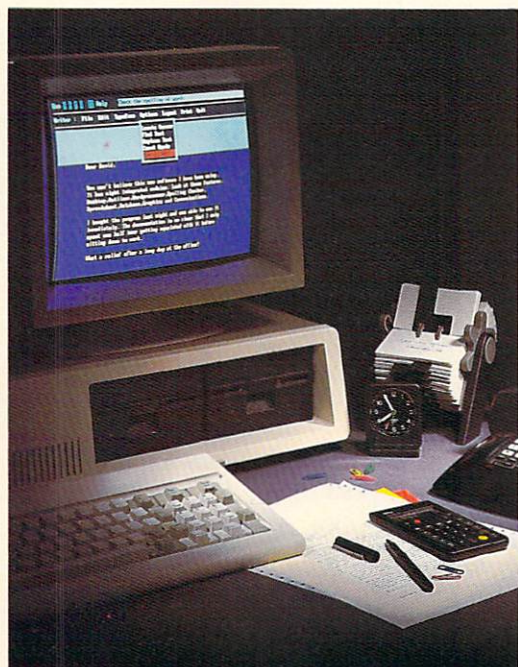
THE OUTLOOK FOR COMPUTER JOBS

Ronald Kutscher, associate commissioner with the Office of Economic Growth and Employment Projections, part of the U.S. Labor Department's Bureau of Labor Statistics, expects three job classifications—mainframe computer operator, programmer, and systems analyst—to nearly double over the next decade, while

the total of all other jobs increases by only 15 percent. This projection holds true despite the softer market some computer science graduates experienced over the past few years. The actual projections, from 1986 to 2000, break down as follows:

| Classification | 1986 Jobs | 2000 Jobs |
|--------------------|-----------|-----------|
| Mainframe Operator | 263,000 | 387,000 |
| Programmer | 479,000 | 813,000 |
| Systems Analyst | 331,000 | 582,000 |

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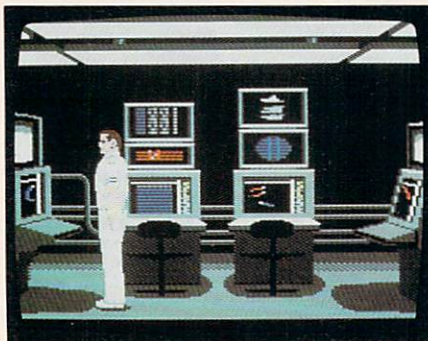
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ENTERTAINMENT

HINTS, NEWS, AND NEW GAME FORMATS

NEWS AND RUMORS

★ At the Consumer Electronics Show (CES) in Las Vegas, we got a sneak preview of **MicroProse's** newest project. **Sid Meier**, a MicroProse co-founder, is working with novelist **Tom Clancy** on a computer adaptation of Clancy's best-selling novel *Red Storm Rising* (RSR). In both the book and the program, Muslim terrorists attack a Soviet oil refinery. The Soviets retaliate by attacking



The Attack Control Center in *Red Storm Rising*.

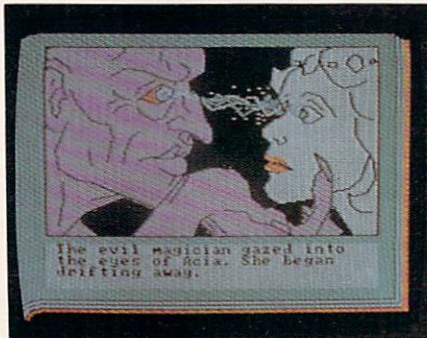
Iran and the NATO countries, and the United States responds by sending subs through the North Atlantic Ocean between Greenland and the United Kingdom. In RSR, the computer game (\$40 for the **C 64/128** and a soon-to-be-available 256K **IBM PC** version), you'll control modern sophisticated weaponry. Your submarine is modeled after the **Los Angeles Class Nuclear Attack Submarine**, equipped with infrared sensors, sonar, radar scanners, sound signatures, and on-line intelligence reports. . . MicroProse also told us that programmers are working on the company's first-ever space game. We don't know anything else about it, but keep your eyes peeled to this column for updates.

★ While out in sunny Las Vegas, we also hooked up with **Larry Bond** and **Three-Sixty** president **Tom Frisina** to see a pre-released version of *Harpoon*, the company's latest game. Bond, who collaborated with Clancy on *Red Storm Rising*, the novel and the computer game, also helped de-

sign *Harpoon*. (The software industry may be hearing even more from Larry Bond in the future.) *Harpoon* is another game that pits NATO against the Russians. Players will be on the cutting edge of military technology. The program includes high-resolution digitized pictures, sets depicting different theaters of war, and graphics and sound effects to keep you on the edge of your seat. You'll have more than 100 war vessels at your disposal, and you can access information on each, along with Bond's commentary, on pull-down screens. *Harpoon* is out now for the 512K **IBM PC** (\$50); a 512K **Macintosh** version (\$50) follows in July.

★ And the legendary saga continues with *King's Quest IV: The Perils of Rosella*. **Sierra On-Line** told us that the game is slated for September for the 256K **IBM PC**. The company also told us that the game has complete day and night cycles and uses Sierra's new improved graphics system. You'll take on the role of Rosella, princess and heroine, and search for the enchanted fruit that will revive your dying father. Female protagonists and antagonists abound in this quest. (Software publishers are finally acknowledging female game players!)

★ **Infocom** has radical news: The company, known for such text adventures as *Zork* and *Bureaucracy*, makes use of graphics with a new and inexpensive product line that brings pop culture to gaming. It's **Infocomics**, comics that come to life on-



Lane Mastodon vs. the Blubbermen.

screen and let you follow the story from different characters' perspectives. Infocom, working with **Tom Snyder Productions**, has introduced three **Infocomics** so far in 128K **Apple C 64/128**, and 256K **IBM PC** formats. The titles are *Lane Mastodon Vs. the Blubbermen*, *The Gamma Force in Pit of a Thousand Screams*, and *ZorkQuest: Assault on Egreth Castle*; they're just \$12 each.

★ **Bethesda Softworks**, creators of *Gridiron!*, winner of a 1987 Critics' Choice Award, is ready to unveil an ice hockey game. We understand that the game is being called *Slapshot!* right now, although that may change (available for the 512K **Amiga** and soon to follow on the 512K **Atari ST** and the 512K **Macintosh**). Bethesda boasts that the graphics and sound effects are so real, they take you to rink side. President Chris Weaver gave kudos to the **Washington Capitals**, who donated time, coaching tips, technical advice, and even reference books to the game designers. The designers went to the team's ice rink for games and pregame skates. They consulted with players and coaches. Team players were kind enough to bash each other into the boards while game designers recorded the sounds. Other sounds built into *Slapshot!* include those of sticks hitting the pucks, pucks hitting the boards, and the crowd's cheers and shouts, among others. Fight scenes and constantly moving players also liven up the game. Get ready for the face-off: *Slapshot!* should be on your local software store's shelves now.

★ **Electronic Arts** announced the release of *Deathlord* (\$40 for 64K **Apple**), an intricate fantasy role-playing game with Japanese themes. *Deathlord* has 157 dungeon levels, 128 types of monsters, 16 continents, and 84 magic spells, plus built-in elements of nature. The game offers special features: macro commands to speed up play and the option to negotiate with monsters rather than fight them. You must master opponents of different intelligence levels.



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CIRCLE READER SERVICE 16



Deathlord is shown here on the 64K Apple.

Deathlord takes place in Lorn, capital of the Kodan Empire, where the emperor has been besieged by the *Deathlord*. Players represent the last group of warriors and may transfer characters from *The Bard's Tale*, the *Wizardry* series, and the *Ultima* series.

—LISA WU

GAME HINTS

WINGS OF FURY (Broderbund Software). Pilot your F6F Hellcat through a variety of missions. Clear enemy-occupied islands, sink ships, and defend your aircraft carrier. Shoot it out with enemy planes and land successfully on the heaving deck of your carrier. Fluid animation and detailed graphics are the strong points of this arcade game. (128K Apple)

★ **Islands:** Arm yourself with bombs, climb to a high altitude, and scout the island you intend to clear. While flying over, drop your bombs (you're bound to hit something) and note the position of enemy anti-aircraft guns. Return to your carrier and arm yourself with rockets. Fly to a high altitude and dive down on the reinforced anti-aircraft emplacements, firing at least five rockets at each one. (Saturation bombing im-



Dogfight with the enemy.

proves accuracy immensely.) If you run out of rockets before destroying all of the emplacements, return and re-arm. Next, arm yourself with bombs and go after the machine gun nests. If you hit one, go after the men before they can run to another machine gun nest. However, if you miss them and nearby machine guns are still active, don't turn around and try to hit the men again; if you do, you'll sustain heavy damage to your plane. Keep flying and gain altitude. When you are out of range of the guns, turn around and try another pass.

★ **Ships:** Sinking destroyers and cruisers is fairly straightforward. Battleships and aircraft carriers are another story. First, clear any islands between the enemy ship and your carrier. Arm yourself with rockets and climb to the highest possible altitude. As soon as the ship comes into sight, dive and launch your rockets until you have lost about half your altitude. Then climb again. Turn around when you reach the top of the screen. If you aren't too battered, try another run. But if your aircraft is smoking, head straight back to your carrier. When the enemy planes start catching up to you, dive down until you shake them. Continue to climb and dive until you can land on your carrier or until you are in a good place to engage enemy planes. Repeat this process until all the ship's guns are silenced.

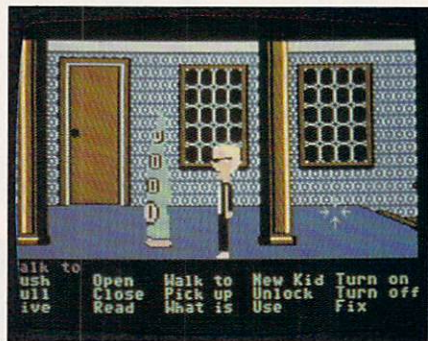
★ **Dogfights:** To shoot down an enemy plane, get on its tail. Wait until the enemy starts to close in on you, then turn. Keep turning in a tight spiral—at some point, the enemy will break off and start flying away. Chase after the enemy and open fire. The enemy will turn around as soon as it's hit. You should turn also, and you will end up behind the enemy again, chasing in the opposite direction. After a couple of these turns, you will probably send the enemy down in smoke. If the enemy flies over an island or ship that you haven't attacked, it is best to turn tail and lead the enemy back over open water where you can pull the spiral trick again. When fighting two or more planes, defensive dogfighting is the key. If you have one of the planes in your sight, but the other enemy plane starts to open fire on

you, you should turn and deal with your attacker and let the other plane escape.

—DAVID LANGENDOEN,
New York, New York

MANIAC MANSION (Lucasfilm Games/Activision). Stalk through a 55-room mansion to rescue your girlfriend from the evil Dr. Fred who is scheming to take over the world. Nurse Edna and Weird Ed, the mad doctor's wife and son, are Dr. Fred's accomplices. It's a strange world! (C 64/128, 128K Apple)

★ To get past Weird Ed, ring the doorbell, and he will go down the stairs. Send someone else to Weird Ed's room. Open the piggy bank and take the dimes. Then pick up the hamster and remove the purple card key that is under it.



How will Sid get past the Green Tentacle?

★ You can get past Nurse Edna in two ways. One way is to have Jeff or Bernard use the tools on the phone in the library to call her. While she is talking on the phone, send someone to her room. Or, have Nurse Edna capture someone and, while she is taking the captive to the dungeon, sneak into her room.

★ To get the key from the chandelier, remove the cassette tape from the loose panels. Then get the record out of the Green Tentacle's room and record it on the tape. Finally, play the tape in the living room. The chandelier will break, and the key will fall to the ground.

★ To fix the video game, have someone with the tools and the flashlight go in the attic. Then change characters and turn off the power in the basement. Change back to the character in the attic. Turn on the flashlight and fix the wires. Finally, change back to the character in the

the defend button once, or else he'll fry you as he is being destroyed! Unlike other beasts, the dragon will not reappear when you return to this screen.

★ The shield can be found two screens to the right of the dragon's lair. Start running when you see the ladder and be ready to jump over the statue just after the scene changes. If you don't, the gargoyle will scalp the back of your golden locks! Now grab the shield and leave the same way you entered.

★ Try to kill as many foes as you can with your sword; save arrows for a last resort.

★ To defeat Necron, you must use your shield to defend yourself against his magic. He will then turn into a crystal. Throw the crystal into the volcano. When the screen turns red and the clock starts counting backwards, you'd better get out of there before she blows! Keep in mind that your final score depends on the ratio between the length of time it takes to return to the first screen and the length of time to reach Necron.

★ For unlimited lives: type in 04-08-59 on the first screen. If the sky in the background turns gray, then you've typed in the information correctly. You may now proceed through the game with no fear for life or limb!

—TONY PHILLIPS,
Edmonds, Washington

CONVERSIONS

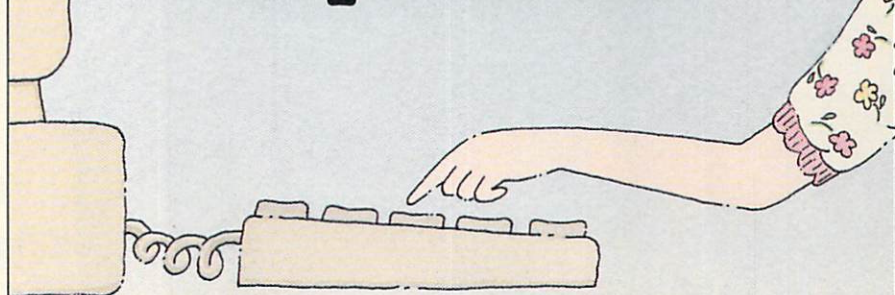
Gunship (MicroProse). Now ready for 512K Atari ST. Already out for C 64/128 and 256K IBM PC. Reviewed in June 1987 issue.

Pirates! (MicroProse). Now available for 128K Apple and 256K IBM PC. Already out for C 64/128. Reviewed in January issue.

Wizardry I: Proving Ground of the Mad Overlord (Sir-Tech). Now available for C 64/128. Already out for 48K Apple, 128K IBM PC, 512K Macintosh. Reviewed in September 1983 issue.

Wizardry III: Legacy of Llylgamyn (Sir-Tech). Now available for 128K IBM PC. Already out for 48K Apple. Reviewed in September 1984 issue. ■

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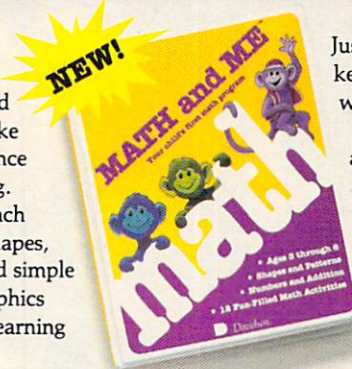


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Teaching tools from teachers

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Strokes of Genius

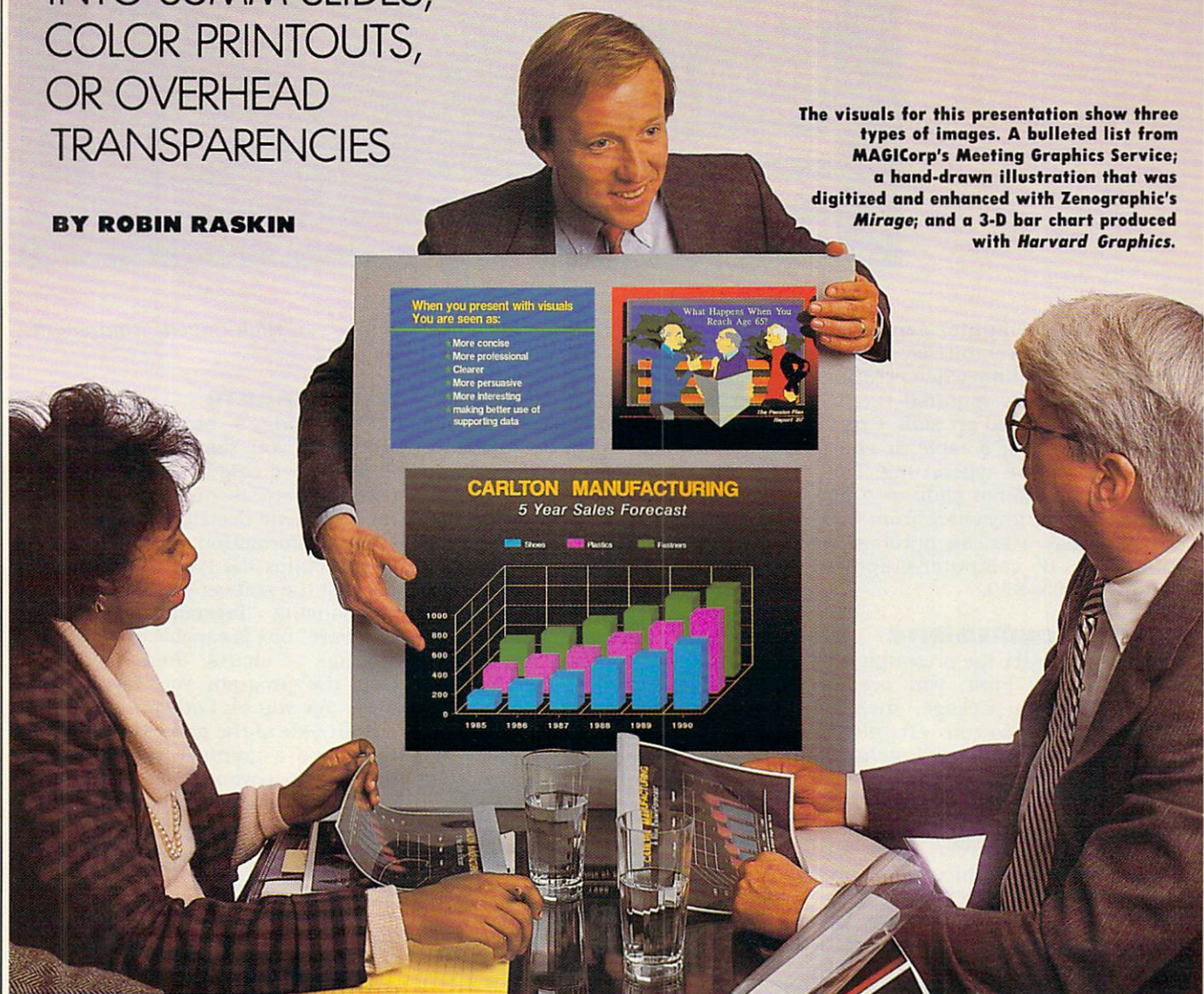
A BETTER WAY TO SELL YOUR IDEAS

Presentation Graphics

TURN COMPUTER GRAPHICS
INTO 35MM SLIDES,
COLOR PRINTOUTS,
OR OVERHEAD
TRANSPARENCIES

BY ROBIN RASKIN

The visuals for this presentation show three types of images. A bulleted list from **MAGICorp's Meeting Graphics Service**; a hand-drawn illustration that was digitized and enhanced with **Zenographic's Mirage**; and a 3-D bar chart produced with **Harvard Graphics**.



Whether you're at the boardroom roundtable or the lecture hall podium, you can enhance any presentation by using graphics. A landmark study conducted by 3M and the University of Minnesota in 1986 found that, overall, a presentation that uses visu-

al support is 43 percent more persuasive than one that doesn't. An appropriately placed pie chart, an eye-riveting bullet list, a crystal-clear flowchart, or a concise graph will catch people's eyes and stick in their minds.

Computers can create attractive business graphics in a jiffy, but moving the picture off the computer screen and into a suitable presentation format was, until recently, some-

what difficult. Today, high-quality output devices, including laser printers, thermal-transfer printers, and film recorders, allow graphic images to escape from the computer screen to other media. Near-typeset quality laser copy, overhead transparencies, 35 millimeter (mm) slides, and photographs can all be prepared for you from a single computer graphic created with a business-graphics software package.

ROBIN RASKIN has written several feature articles and reviews for FAMILY & HOME-OFFICE COMPUTING.

With Lotus's *Freelance Plus*, a horizontal bar chart is illustrated with computer workstation images that were clipped from the program's symbol library and connected with its line-drawing capabilities.

\$4.74 Billion LAN Market by 1994

SOURCE: BUSINESS COMMUNICATIONS CO. INC.

Global LAN sales

(billions of dollars)



Global LAN installations

(millions of network ports)



Best of all, computer-generated graphics aren't prohibitively expensive. There was a time when creating any sort of graphic required the expertise of a dedicated art staff. Creating a hard copy of a table or chart required expensive typesetting. Creating a simple 35mm slide of a pie chart could cost anywhere from \$25 to \$100. Today, you can purchase a 35mm slide of computer-graphics creations for \$5-\$20.

SYSTEM REQUIREMENTS

How do you enter the presentation-graphics arena? First, you need a business-graphics package, such as *Harvard Presentation Graphics* (Software Publishing) or *Freelance Plus* (Lotus). These packages (see "Presentation-Graphics Software" box for details) will produce images on your computer screen. Most advanced business-graphics programs are designed for MS-DOS machines, though *Cricket Presents . . .* (Cricket Software) and *PowerPoint* (Microsoft) are for the Macintosh. MS-DOS machines require either Hercules or color graphics adapters (either CGA, EGA, or VGA); on both MS-DOS and Macintosh, a hard-disk drive is highly recommended since graphics files can be large.

There are also a few good graphics programs for the Apple II line (especially the IIGs), including *Graphics Department* (Sensible Software) and *ShowOff* (Broderbund). If you want to produce a video presentation on a VCR, the Amiga is the best machine to use.

Next, you need a means for plucking the image from the computer and depositing it into a high-resolution output format. Laser printers produce black-and-white graphics; color thermal-transfer printers produce color copy. For presentations in front of larger groups, the same graphic information can be printed on acetate to create an overhead transparency or "shot" with a film-recording device to create a 35mm slide or color photograph.

If you don't have any of this equipment on hand, you can buy time on expensive output equipment for a relatively moderate fee. Graphics service bureaus will take a disk or modem transmission and convert your file into the form of your choice. (See "Graphics Service Bureaus: An Alternative to High-Priced Equipment," on page 42).

native to High-Priced Equipment," on page 42).

BASIC CHARTS

With today's business-graphics software, you don't need to be a Picasso to create a graphic because the software is designed to make many artistic decisions for you. The type of information you need to present dictates the type of chart you'll use. All the software listed in the accompanying "Presentation-Graphics Software" box is capable of producing a range of charts. Just make sure that the program you choose performs for you on both the input and output side of the process. No matter how good a graphics package looks on-screen, it won't help if the package doesn't support output to a laser

THE ADVANTAGES OF DIFFERENT PRESENTATION MEDIA

BLACK-AND-WHITE LASER PRINTOUTS

Though black and white, these high-quality printouts can sometimes show color differentiation with shadings and cross-hatchings. Best when creating written materials for inclusion in a report or for presentations to small groups. Can produce sharp overhead transparencies.

COLOR PRINTOUTS

Color printouts can be used with an overhead projector, though you must test to make sure the color ink will not melt under the heat and has enough depth to project well. Otherwise, color printouts are most effective in a business report, providing a welcome break from pages of black text.

OVERHEAD PROJECTOR

A versatile medium, as overheads can be when created with laser printers, plotters, thermal printers, or even good copiers. Overheads are effective for tutorial presentations, since you can talk in a lighted room and invite give-and-take with the audience. Perceived as friendlier than slides. Can mix black-and-white and color overheads for "razzle-dazzle" effect.

35mm SLIDES

Perceived as the most professional presentation medium. Effective for large groups. However, since lights must be off or dimmed, and projector is often attached to a timer, this presentation tends to be less personal and interactive than others.

printer or a high-resolution film recorder.

Text with Bullets. Nearly 65 percent of all business graphics are simple text graphics, according to Dr. Jerry Cahn, president of Brilliant Image, a New York City graphics service bureau. Text graphics—primarily used when you want to convey ideas—contain words or short phrases that capture and summarize major points. Placing bullets, daggers, or other symbols before each phrase helps focus the audience's attention on each point.

Typically there are no more than four or five bullets to a graphic, with each bulleted item containing from 6 to 10 words. The type in these graphics is much larger than typical word-processing type so that it can be viewed from a distance. Text graphics can also display tabular data, such as a list of sales over the last five years. Sometimes you'll want a two-column text graphic, where one column might list the "pros" of an issue and the other the "cons."

A good program for generating text graphics will let you choose from a number of attractive fonts and color palettes. It will let you size your text so that your headline might be larger than the points that follow. Most programs that create text graphics can also create simple pie and bar graphs, but some, such as *Sign-Master* (Ashton-Tate's Graphics Products Center; \$245) are used solely for creating text.

Pie and Bar Charts. Since most business presentations revolve around "data," most presentation-graphics software provides a way to represent data graphically. Often, the best way to answer the audience's questions (How much will X cost? How many people will be affected by X? How are we doing with product X?) is with pie charts, bar charts, or line graphs. Any one of these graphics that illustrates the "bottom line" spares you and your audience the agony of wading through a sea of numbers.

Pie charts are generally used when comparing percentages, often to show one company's or product's share of the market. Bar graphs are commonly used to show an increase over time, such as a company's sales increase from 1987 to 1988.

In either case, there are two ways to get data into a business-graphics program. One is to type in the data manually, and the other is to import the data from another source, typically a spreadsheet. Some spreadsheets have their own graphics components. *Microsoft Works*, *Lotus*

1-2-3, *SuperCalc4*, and *pfs: First Choice* all have generous built-in graphics capabilities. Once you have entered the data into the spreadsheet, you can specify the type of graph you'd like to make—a pie chart, a bar chart, or a line graph. You can also add information such as title and legend.

Beyond this, many people use business-graphics packages to spruce up the simple graphs created by *Lotus 1-2-3*, *Freelance Plus* (Lotus) and *Sound Presentations* (Communication Dynamics) both allow you to import 1-2-3 files and gussy them up with better, bolder fonts, fancier legends, and picture symbols. They let you rotate, size, and stretch elements of a graph to make it more visually appealing. *Visualizer II* and *Visualizer IIGS* (PBI Software) let you make charts from *AppleWorks* spreadsheet data.

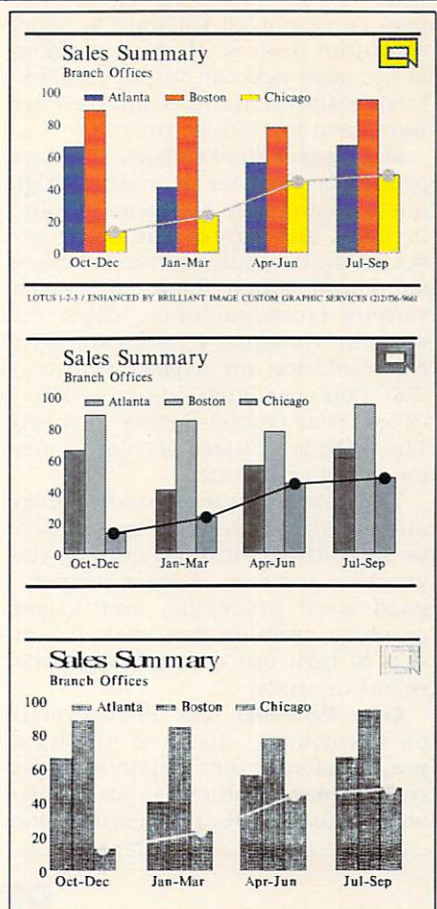
FANCY CHARTS

Text graphics and simple bar charts are effective when used sparingly, but can become tedious and repetitive. To add variety, use software that adds special effects, allowing you to "explode" a slice of a pie chart or add three-dimensional shading to a bar chart.

Symbol Libraries. Even more sophisticated packages, all for MS-DOS machines, let you choose from a library of clip art: *Diagraph* (Computer Support Corporation; \$395), *Execuvision* (VCN; \$395), *Autographix 35* (Autographix; \$895), and *PC Slide* (Management Graphics Inc.; \$695). These libraries contain ready-to-use icons, such as maps, industry symbols, machines, stars, skylines, people, and fancy borders. You select a symbol and then paste it into your graph.

For example, a bar chart of regional sales can easily be superimposed over a map of the northeastern United States. Freehand drawing programs can also be used, but they require some artistic prowess. Symbol libraries are ideal for those less artistically inclined.

Overlays and Builds. Some programs let you add text anywhere on the graphic; others allow you to create overlays and builds. A build lets you position the first graphic so that subsequent ones build on it in a sequence. For example, if your first graphic shows the first year of a five-year plan, the second graphic would show years one and two—in perfect alignment. Building on data in previous graphics is a good presentation strategy, since you can't expect your



Examples of the different printouts produced by color-thermal, laser, and dot-matrix printers.

audience to memorize all the data as it flashes in front of them.

Adding Color. Most business-graphics packages are confined to limited color palettes. With MS-DOS machines, a CGA allows four colors at 320-by-200 dots, and an EGA allows 16 colors at 640-by-350. But there are ways to push these limits by using rather expensive packages that offer true-to-life color. Packages such as *Lumena* (Time Arts Inc.; \$2,495) offer millions of colors and patterns. They also allow you to enter information with a digital scanner. The scanner moves across a hard-copy drawing or photo and translates the information digitally into the computer. The graphics software can then manipulate the scanned information.

SHOW—DON'T TELL

You should decide how you're going to use your graphic before you decide what form you want it in (see "The Advantages of Different Presentation Mediums"). The form you choose will determine the proper output device. To a certain extent, it will also determine the graphics software you

use, since not all software supports all output devices. Here's a rundown of the most popular output forms for business presentations and the hardware used to produce them.

Black-and-White Printouts. The laser printer is ideal for generating high-quality hard-copy business graphics in black and white. The colors you see on the computer screen are translated into either shades of gray or various cross-hatchings, depending on your computer's software. Typical resolution for a laser printer is 300 dots per inch (dpi), which is called near-typeset-quality printing. Thus, the laser's lack of color is offset by its high resolution.

The laser printer works quickly and quietly. Often, the laser fonts can be substituted for those used by your graphics software. A laser printer, a good word processor, and a good graphics program can work in concert to turn out a very businesslike report or study.

Color Printouts. The 3M/University of Minnesota study of business graphics found that respondents perceived color graphics as more professional and more interesting than



Polaroid's PalettePlus film recorder (\$2,999) delivers instant prints, slides, and overheads from MS-DOS-compatible graphics images.

black-and-white graphics. To obtain high-quality color printouts, you'll need an ink-jet or thermal-transfer printer or a plotter. You can also use dot-matrix printers. (See this issue's "Buyer's Guide to Color Printers.")

Ink-jet printers spray tiny drops of ink on the paper. Thermal-transfer printers use heat to melt a wax-based ink onto the page. Again, you must choose software that works with your specific color printer. Most IBM PC graphics programs support the IBM Color JetPrinter.

High-quality thermal color printers are expensive (\$6,000 and up), but provide palettes of more than 4,000 shades and generate realistic, vivid graphics that hold up well.

Plotters are unbeatable for high-quality output at reasonable prices. They can print on a variety of surfaces, including acetate films and glossy paper. The colored pens in the plotter create a multicolored graphic. Some plotters may smear ink as they work, especially where large areas need to be filled. To avoid smears, use your plotter on a low speed.

Overhead Transparencies. Transparencies to be used with an overhead projector are created by printing the computer graphic onto an acetate sheet. They are a great presentation aid, especially when you need to present tutorial information. You can address your audience in a lighted room, working interactively with the overhead as you speak.

A number of output devices will create an overhead color transparency. Thermal-transfer printers and plotters are the best choices. In some cases, you can feed the acetate sheet directly to a laser printer or dot-ma-

GRAPHICS SERVICE BUREAUS: AN ALTERNATIVE TO HIGH-PRICED EQUIPMENT

Send a Graphics File on Disk or by Modem, and Receive a Slide or Color Printout in Return

Those who don't have and can't afford expensive output equipment, or those who only need occasional graphics presentations, will jump for joy at the alternative offered by graphics service bureaus. You supply the computer graphic; the service bureau supplies the high-priced output equipment to produce your graphic.

Although each service bureau has its own *modus operandi*, the basic concept is simple. You create your graphic with your software and send it to the bureau via modem or on disk. The bureau returns the slide or printout to you via regular or express mail (you pay the shipping costs). Most graphics bureaus produce laser hard copy, thermal-transfer color hard copy, 35mm slides, and overhead transparencies. The turnaround time from disk to graphic is usually 24–48 hours. A slide costs between \$5 and \$20, an overhead transparency between \$5 and \$22, a laser printout between \$3 and \$8, and a thermal printout between \$5 and \$10.

Software Requirements. Virtually all graphics service bureaus handle MS-DOS files, and a handful take Macintosh files. Beyond that, graphics service bureaus work differently. Most will take a file from a variety of "off-the-shelf" graphics packages and produce the image. A few provide their own graphics software, which you use to create an image. However, more and more of these "dedicated" bureaus are developing drivers to support

leading commercial-graphics packages. For example, Genigraphics, which has its own software, is also developing a driver for Microsoft's PowerPoint.

Transmission of the graphic information is handled differently by each outfit. Some, like MAGICorp, accept files via modem. Others, such as CompuFilm, sell you a disk. You put your file on disk and return it to them for processing. Others take data in either format.

Sending Your File. Bureaus that use their own software include a communications module in the software. This makes it easy to transmit data since the dial up and ordering procedure is built into the software. These packages also typically include sample color palettes and font tables so that you have an idea of what you'll get in return.

Bureaus that support a variety of software usually want files sent with a commercial-communications program. Some bureaus simply want you to "dump" your graphic information in any format, and others require a special graphics protocol, such as the Computer Graphics Metafile (CGM) used in programs like *Harvard Graphics* and *Freelance Plus*.

With the exception of CompuFilm, which lets you mail in a file on disk, sending files created by off-the-shelf software requires some practice. You need to know which format is required and how to establish correct communications proto-

cols. Each bureau normally supplies this start-up information, and all of the bureaus seem eager to help new customers enroll. Nonetheless, the learning process can be frustrating.

Registration. Most bureaus require some form of registration. CompuFilm, on the other hand, doesn't require registration since you "pay as you go" by including the money with your disk. Other bureaus allow you to register for a single session. Once you establish a regular account, the bureau will bill you for work or charge it to your credit card.

Placing an Order. Each time you connect electronically with a bureau, you fill out an on-line order form. The form asks you to specify the type and quantity of output you want. In some cases, you can request that certain enhancements be made to your work. You also specify how the output graphics should be returned to you, usually choosing between a number of express-mail and messenger services. Though the typical turnaround for a service bureau is 24–48 hours, most will rush orders for an extra fee.

For those who don't have computer-graphics software, and might not even have a computer (you can use a dumb terminal), MAGICorp offers its Meeting Graphics Service. You dial up and create a slide by choosing from a manual of sample charts and indicating your own text input.

PRESENTATION-GRAPHICS SOFTWARE

MS-DOS

Freelance Plus

Lotus Development Corp.
55 Cambridge Parkway
Cambridge, MA 02142
(617) 577-8500

\$495; 384K, Hercules graphics, CGA or EGA required

Lotus 1-2-3 can draw a graph of spreadsheet data, but *Freelance Plus* can enhance the graph with its built-in symbol library and fine selection of fonts and colors. In addition to importing spreadsheet data, you can enter data manually or even use a digitizer. *Freelance* stores files in Metafile format, which can be sent to film recorders.

Harvard Graphics

Software Publishing Corp.
1901 Landings Dr.
P.O. Box 7210
Mountain View, CA 94039
(415) 962-8910

\$495; 512K

Harvard Graphics supports a variety of printers, plotters, and film recorders. The latest version of the program (2.1) has a symbol library and a spelling checker and accepts input from a digitizer. Allows you to save charts and link them to Lotus 1-2-3 worksheets.

Autumn and Mirage

Zenographics, Inc.
19752 MacArthur Blvd., Suite 250
Irvine, CA 92715
(714) 851-6352

\$495 for Autumn; \$895 for Mirage
512K required, but 640K recommended

Autumn and the more sophisticated *Mirage* offer both freehand drawing and business graphics. Both support a variety of high-resolution output devices. These packages are known for the beautiful colors they can create.

35mm Express

Business & Professional Software
143 Binney St.
Cambridge, MA 02142
(617) 491-3377
\$695; 256K

A full-featured business-graphics program with built-in symbol library and good selection of fonts and colors. Supports many major high-resolution output devices, and in return is supported by many graphics service bureaus. Accepts input from digitizers. The company's *Overhead Express* package (\$99) creates text charts.

Master Graphics Series (Chart, Sign, Map, Diagram)

Ashton-Tate's Graphic Product Center
20101 Hamilton Ave.
Torrance, CA 90502
(213) 329-8000
Chart-Master, \$375; 192K
Sign-Master, \$245; 192K

Map-Master, \$395; 384K

Diagram-Master, \$345; 384K

Presentation Pack includes all except *Map-Master*, for \$595
All programs are available in 3.5-inch format for \$20 extra.

A complete collection of well-established graphics software, including *Chart-Master*, *Sign-Master*, *Map-Master*, and *Diagram-Master*. Unlike full-featured programs, each in the *Master* series is dedicated to a single task. *Sign-Master* for example, creates only text graphics. Ashton-Tate has its own slide-production service (\$15 per slide) for registered users of the *Master* series.

MACINTOSH

Cricket Presents . . .

Cricket Software, Inc.
40 Valley Stream Pkwy.
Malvern, PA 19355
(215) 251-9890

\$495; 1MB and hard drive required

Cricket's line of graphics software (including *Cricket Graph*) is one of the first Macintosh products to be supported by graphics bureaus and film recorders. The new *Cricket Presents . . .* has a large color palette (64 colors per presentation on the Mac II) and works with a variety of output devices, including *ImageMaker* and *SlideWriter*. Files can be sent by disk or modem to the Autographix graphics-service centers (see "Graphics Service Bureaus") for reproductions of slides, color prints, and overhead transparencies.

Microsoft PowerPoint

Microsoft Corp.
16011 NE 36th Way
Box 97017
Redmond, WA 98073
(206) 882-8080
\$395; 512K

Complete presentation package that includes template library, tabling capabilities, and graph-making tools. Supports a variety of output devices.

Microsoft Chart

(see address and telephone above)
\$125

128K Macintosh; also for 256K IBM (\$395)

Complete business-graphics package with eight different chart types. Can change text position and do interleaving.

VideoWorks II

MacroMind, Inc.
1028 W. Wolfram
Chicago, IL 60657
(312) 871-0987
\$195; 512K

Create slide shows and animated presentations. Includes sound and color (Mac II) capabilities, a complete paint program, clip art, and clip animation. Can also import files from *MacPaint* and *MacDraw*.

APPLE II

Graphics Department

Sensible Software, Inc.
335 E. Big Beaver, Suite 207
Troy, MI 48083
(313)-528-1950
\$125; Apple II Plus/IIe/IIc/IIgs

Create and present a sequenced "slide" show with the Slide Projector module. You can show up to 32 "slides" or images held on disk. You can also caption each frame.

ShowOff

Broderbund
17 Paul Dr.
San Rafael, CA 94903
(415) 492-3500; (800) 527-6263
\$60; 512K Apple IIgs

Create and control a presentation by building graphs and charts or by customizing graphics using symbols and borders from a library. Import graphics from *The Print Shop* and other paint programs. Then sequence the graphics, save them to disk, and run the presentation. *ShowOff* can also control slide projectors and tape players.

Visualizer IIe and Visualizer IIgs

PBI Software
1163 Triton Dr.
Foster City, CA 94404
(415) 349-8765
\$90 for 128K IIe/IIc; \$100 for 512K IIgs
gs version requires mouse and 3.5-inch disk drive. Both programs can take an *AppleWorks* spreadsheet and transform it into charts.

FILM RECORDERS

ImageMaker
Presentation Technologies
743 N. Pastoria Ave.
Sunnyvale, CA 94086
(408) 749-1959
\$4,995

This desktop slide maker creates high-resolution slides for about \$.50 per slide. Connects to a 512K IBM PC and 512K Macintosh through the serial port. The Macintosh requires an *ImageMaker* Mac-Driver (\$149).

Polaroid Palette
Polaroid Palette Plus
Polaroid
575 Technology Square
Cambridge, MA 02139
(617) 577-2000
\$1,999 and \$2,999

For MS-DOS computers, *Palette* is compatible with CGA; *Palette Plus* with EGA or CGA. Both connect via the RS-232 serial port. You can custom-order *Polaroid* Palettes for other machines, as well. Call (800) 343-5000 for more information.

trix printer. But first read the printer manual to make sure it will support acetate and to determine if it requires a special kind. Thick plastic can melt or jam in some printers.

Whichever route you choose, project the image in private before you go public to make sure the picture is clear enough.

Slides and Photos. Slides are neat and professional. There are a number of ways to produce 35mm slides and photos from an image on the computer screen.

You can always take a 35mm camera, aim it at the screen, and shoot. Anyone who's tried this will discover that it's a tricky process and that the resolution of the final product will be the same as that of the screen.

A more reliable method, which also enhances the resolution, utilizes a film recorder. A film recorder is a combination of electronic and photographic gadgetry that attaches to your computer (usually via the serial port), captures the screen image digitally, and records it on film. The film recorder may boost the resolution of the screen display as it processes the picture. The result is a slide or photo with a resolution that may be higher than that of the display itself.

To interface with a film recorder, the computer must know how to send information to it. For now, software that can support film recorders is somewhat limited. Though some film recorders require that the software communicate directly with

them, new "device-independent" graphics standards are beginning to emerge and vie for acceptance. Two popular MS-DOS standards are the Virtual Device Metafile (VDM) and Computer Graphics Metafile (CGM).

If you use a film recorder, you must process the film after you capture the image. You must also mount the film to be used as slides, which requires a certain amount of expertise. You will also learn what film produces the most faithful color, which processing is best, and how to mount a slide in a glass or plastic mount. Owning your own film recorder allows you to process slides for pennies apiece.

Two of the most popular "do-it-yourself" film recorders are the Polaroid Palette (\$1,999) and PalettePlus (\$2,999), for use with the IBM PC family. The size of a shoe box, Palette captures your image on its own internal screen, the graphics software (if it has a built-in Palette driver) boosts the resolution and enhances the color, and then Palette's lens produce a transparency. Other more expensive film recorders such as the Matrix QCR and PCR (\$11,795 and up) are used by graphics service bureaus.

Videotapes. With packages such as *VideoWorks II* for the Macintosh, you can create professional slide shows and animated presentations that can then be put on videotape. The computer-video connection will be discussed in detail next month in an article on "desktop video," a field now dominated by the Amiga.

DESKTOP PUBLISHING SEQUEL?

After the success of desktop publishing—which followed the success of the spreadsheet, which followed the success of word processing—developers and marketers began to look for the next hot new software application. Many think it will be *desktop presentations*, a term they hope grabs some of the panache of desktop publishing and expands the market. More people make presentations than need to publish, the thinking goes, and so the market for desktop presentations is potentially bigger. Furthermore, with dazzling new color displays from both Apple (on the Macintosh II) and IBM (with VGA), the urge to move color off the screen and onto paper, slides, and overheads will be a strong one. If all this is true, you're going to see lots of bulleted text graphics and exploded pie charts crossing your desk this year. The computer, which is giving us more data than we can swallow, will help us interpret it. ■

MAJOR SERVICE BUREAUS

Autographix, Inc.
100 Fifth Ave.
P.O. Box 9031
Waltham, MA 02254
(617) 890-8558

Autographix has regional service centers for graphics production and will generate slides, overheads, transparencies, and hard copy. It supports its own MS-DOS graphics software, *Slide Expert* (\$249), and *Autographix 35* (\$895), as well as *Cricket Presents . . .* for the Macintosh. Independent service bureaus using Autographix workstations can enhance and customize the computer-generated artwork. A laser print costs \$3; an overhead transparency, \$5; slides are \$7–\$10; thermal prints are not available. There's no minimum order.

CompuFilm Corp.
1 Lombard St., 2nd Fl.
San Francisco, CA 94111
(415) 397-5094

CompuFilm provides a "slide-processing" kit and mailer for MS-DOS users. You save your image onto CompuFilm's disk and send it to the company for processing, using its cardboard mailer and Federal Express delivery. The package (shipping and handling not included) costs \$150 for 10 images. An overhead transparency costs \$22. The bureau does not provide laser or color-printing services.

MAGICorp
50 Executive Blvd.
Elmsford, NY 10523
(914) 592-1244

MAGICorp is one of the largest production facilities for MS-DOS computer graphics and will add Macintosh support this spring. MAGICorp supports a large number of graphics programs and accepts the data via modem (on a toll-free number). MAGICorp also provides production service for Ashton Tate's *Graphic Services*. People without graphics software can design and order slides on-line via MAGICorp's

Meeting Business Graphics Service. There's a \$10 basic fee per image; beyond that, laser prints and color slides are \$5; overhead transparencies, \$8; and thermal print, \$7. Minimum order is \$50.

Geniographics
4806 West Taft Rd.
Liverpool, NY 13088
(315) 451-6600

A large, well-established graphics bureau with regional offices around the country, Geniographics accepts data from its own MS-DOS program, *Graftime*, and soon will accept *Microsoft PowerPoint* files. It supplies custom services on its own workstations and presentation consulting services. It can provide color and laser printing, slides, and transparencies.

DataColor Graphics
9645 Webb Chapel Rd.
Dallas, TX 75220
(214) 350-9442

Part of a larger traditional graphics lab called Meisel Photochrome, DataColor Graphics creates slides from a number of MS-DOS packages. It accepts files on disk or by modem. Slides cost \$7.50, overhead transparencies (vue-graph) are \$10–\$15; color and laser printing aren't available.

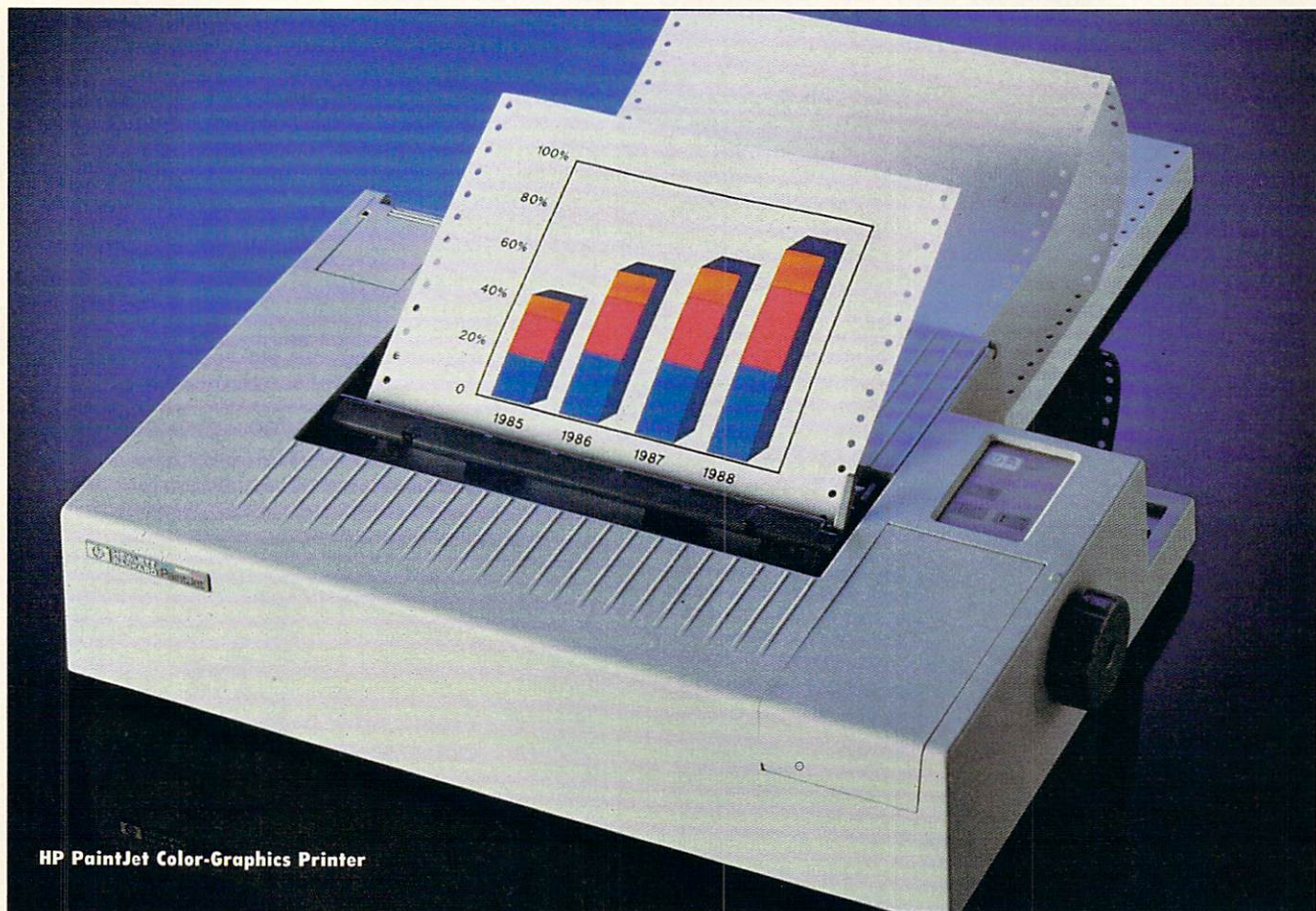
Brilliant Image
141 West 28th St.
New York, NY 10001
(212) 736-9661

A full-service graphics bureau, Brilliant Image supports a number of popular MS-DOS programs (including *Lotus Freelance Plus*, *Microsoft Chart*, *Harvard Graphics*, and *Zenographics Mirage*) and also offers custom-enhanced services. It requires no minimum order or registration fee. Slides and overhead transparencies are \$10, color prints are \$10, and laser prints are \$8 (\$4 if ordered with a slide). Brilliant Image will help customers develop their presentations free of charge.

BUYER'S GUIDE TO COLOR PRINTERS

BY ROGER HART

HOLD ATTENTION AND ADD EMPHASIS FOR EFFECTIVE PRESENTATIONS



HP PaintJet Color-Graphics Printer

There's little doubt that color adds excitement to computers. Even spreadsheet programs, which one might assume produce deadly visuals, make good use of color monitors. But that excitement evaporates for most of us when we print out a paper copy. What computer user who has a color monitor hasn't thought about maximizing and reproducing the beautiful on-screen images?

Recent surveys by CAP International, a market-research firm that studies the computer industry, report that a significant number of the respondents plan to buy color printers or to add color output to their computer systems within the next two years. Why is color printing becoming so popular? After all, there haven't been any recent major advances in technology or performance.

One reason is the growing availability of graphics software that supports both high-resolution color displays,

such as Enhanced Graphics Adapter (EGA) and Video Graphics Array (VGA), and color printers. At one time, very little software had built-in print drivers for color printers. A second reason is the growing interest in presentation graphics, which make the use of color more important. If it's not overused, color adds a new level of interest and understanding to charts and diagrams. Color helps differentiate information and keeps ideas separate and more easily comprehensible. Color also holds attention and adds emphasis.

OVERHEAD TRANSPARENCIES

All color printers produce single copies at a time. If you need 30 copies of a chart for a meeting, you'll have to print 30 individual copies or print one and go to a copy center with a color duplicating service. Color printing is slow, so 30 copies will take some time. Moreover, color copiers don't always produce printouts with sharp color.

You can, however, make one color copy that a large group will be able to see. Just print your color graphic on

Contributing editor ROGER HART also wrote "Paper Can Make or Break Your Image" in this issue.

a clear acetate sheet, and you have a color transparency you can show with an overhead projector. The best printer for such a job is an ink-jet or thermal-transfer printer, or plotter, because either lays the ink on thicker than does a dot-matrix printer.

There are also times when you will not want color. Rainbow-colored resumes and job-application letters just aren't accepted yet by most companies. Since you'll also need black printing, and color printers offer both color and black, color printers are the more logical option.

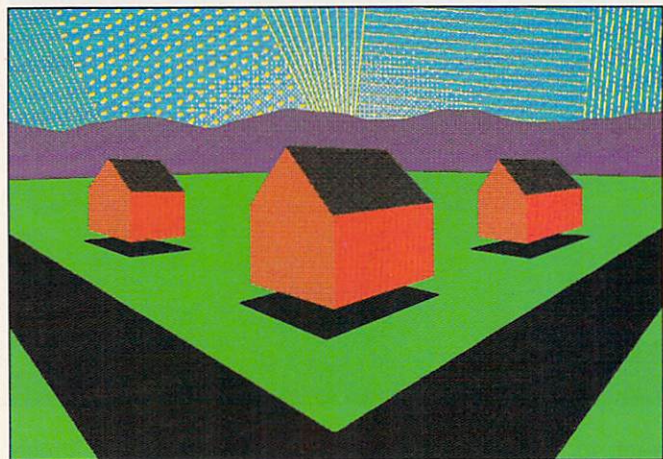
SOFTWARE SUPPORT

Before you run out and buy a new color printer, remember that your software will have to support the printer, or it simply won't work (unless you can write a print driver).

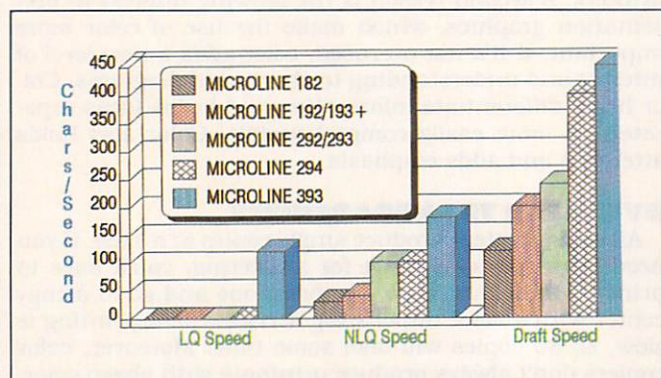
Color printers use four colors, including black, to create the entire spectrum of colors. The color in this magazine is likewise created with the four basic printing (or "process") colors—magenta (red), cyan (blue), yellow, and black. To print green, the software tells the printer to print yellow and then print cyan over it.

Because the printer passes over the same area several times to mix colors, the printing process can be slow, especially on a complex graphic configuration.

There are many color printers on the market, but you may find that your software only directly supports one or two models. That doesn't preclude buying a different model, however. Many printers are work-alikes of others and use the same printer codes. Many will accept the IBM ProPrinter or Epson JX color codes (see chart), for example.



Drawing created using *Cricket Draw* and printed on a Xerox 4020 Color Ink Jet Printer.



Bar chart created using *GEM GRAPH* and printed with an Okidata 393C.

Even standard black-and-white programs aren't left out of the color picture. The output of many MS-DOS programs can be enhanced with color and printed out using *Colorshop* (Colorshop Inc., 811 W. Seventh St., #205, Los Angeles, CA 90017; [213] 629-2348; \$60). For the Macintosh, *Colormate* (SoftStyle, Inc., 7192 Kalanialoe Hwy., #205, Honolulu, HI 96825; [800] 367-5600, [808] 396-6368; \$75) allows color to be added to many of the standard Mac programs, such as *MacPaint*, and printed out using an ImageWriter II with a color ribbon.

PRINTER TYPES

There are three common varieties of color printers on the market today. (Plotters are in a different category.)

Dot-matrix printers. Dot-matrix color printers are similar to standard dot-matrix models, except that they understand control codes that represent certain colors and are able to control the position of their ribbons to place the proper color in front of the printhead at the right time. In fact, some dot-matrix printers can be outfitted with color-print options.

Like standard dot-matrix printers, color printers have different printhead configurations. The Epson EX-800, for example, uses a 9-pin printhead. The Brother M-4018 uses 18-pins, the C. Itoh ProWriter C-715A has 24 pins, and the new Apple ImageWriter LQ sports 27 pins. The more pins in the printhead, the better the output.

Dot-matrix printers are best suited for printing colored text or line charts. Though they can print on acetate for overhead transparencies, they usually don't give the depth of color needed to project onto a screen.

Thermal-transfer printers. Thermal-transfer printers

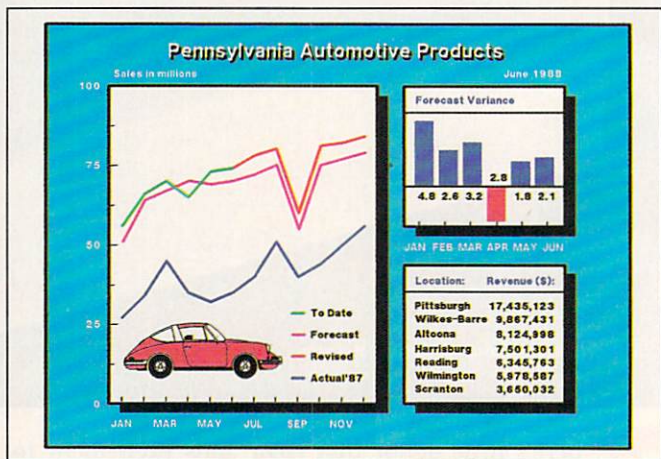
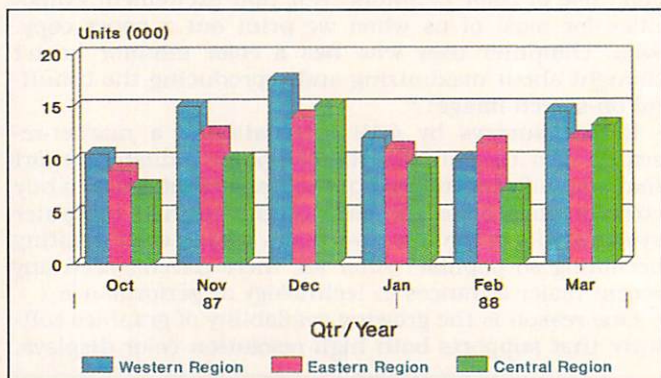


Chart created using *Lotus Freelance Plus* and printed with an HP PaintJet Color Graphics Printer.



Bar chart created using *Harvard Graphics* and printed on an Epson LQ-2500.

BUYER'S GUIDE TO POPULAR COLOR PRINTERS

DOT-MATRIX PRINTERS

| Company Model | Basic ¹ Price | Color Option | Tractor | Total Price ² | No. Pins | Speed (cps) | | Carriage Type | Printer Buffer (K) | Font Card/ cart. slot | Maximum Graphics Resolution ⁴ | Interface | | Printer Codes Compatible With |
|---|--------------------------|--------------|---------|--------------------------|----------|-------------|-----------------------|---------------|--------------------|-----------------------|--|-----------|------|---|
| | | | | | | Draft pica | NLQ ³ pica | | | | | Std. | Opt. | |
| Alps America Alps ALQ200 | \$695 | Std | \$65 | \$760 | 24 | 240 | 80 | Narrow | 7 | yes | 240x216 | P | S | Epson LQ1500, JX |
| Alps ALQ2400C | \$1,395 | Std | Std | \$1,395 | 24 | 360 | 120 | Wide | 4 | yes | 240x216 | P & S | | Epson LQ1500, JX |
| Apple Computer ImageWriter II | \$595 | Std | Std | \$595 | 9 | 250 | 45 | Narrow | 2 | no | 160x160 | S | | ImageWriter |
| ImageWriter LQ | \$1,399 | Std | Std | \$1,399 | 27 | 250 | 90 | Wide | 5 | no | 216x216 | S | | ImageWriter |
| Brother M-2518 | \$1,295 | Std | Std | \$1,295 | 18 | 300 | 50 | Wide | 8 | yes | 240x216 | P | S | Epson EX/FX, IBM Pro |
| M-4018 | \$1,695 | Std | Std | \$1,695 | 18 | 400 | 67 | Wide | 16 | yes | 240x216 | P | S | Epson FX, IBM Pro |
| C. Itoh Digital Products, Inc. C. Itoh ProWriter C-310 CXP | \$749 | Std | Std | \$749 | 9 | 300 | 33 | Narrow | 2 | yes | 240x216 | P | S | Epson FX, IBM Pro |
| C. Itoh ProWriter C-715A | \$1,295 | Std | Std | \$1,295 | 24 | 300 | 100 | Wide | 32 | yes | 360x180 | P & S | | Epson LQ1000, IBM Pro, Diablo, Toshiba |
| Epson America Inc. Epson EX-800 | \$649 | \$80 | Std | \$729 | 9 | 250 | 50 | Narrow | 8 | no | 240x216 | P & S | | Epson, IBM Pro |
| Epson LQ-2500 | \$1,449 | \$100 | Std | \$1,549 | 24 | 270 | 90 | Wide | 8 | yes | 360x180 | P & S | | Epson, IBM Graphics |
| Genicom 1025 | \$745 | \$100 | Std | \$845 | 18 | 200 | 100 | Narrow | 2 | yes | 240x144 | P/S | | Epson FX/JX, IBM Color/ Graphics, Diablo, Genicom |
| NEC NEC Pinwriter CP6 | \$860 ⁵ | Std | \$150 | \$1,010 | 24 | 216 | 65 | Narrow | 8 | no | 360x360 | P/S | | Epson LQ |
| NEC Pinwriter P5XL | \$1,295 | Std | \$179 | \$1,474 | 24 | 290 | 100 | Wide | 8 | yes | 360x360 | P | S | Epson LQ |
| Okidata Okidata Microline 292 | \$649 | Std | \$50 | \$699 | 18 | 240 | 100 | Narrow | 8 | no | 288x144 | P/S | | Epson JX, IBM Graphics, Microline |
| Okidata Microline 393C | \$1,499 | Std | Std | \$1,499 | 24 | 300 | 120 | Wide | 30 | yes | 360x360 | P & S | | Epson LQ |
| Seikosha America Inc. Seikosha MP-1300AI | \$599 | \$155 | Std | \$754 | 9 | 300 | 50 | Narrow | 10 | no | 240x144 | P & S | | Epson FX, JX, IBM Graphics |
| Star Micronics Inc. NX-1000 Rainbow | \$379 | Std | Std | \$379 | 9 | 144 | 36 | Narrow | 4 | no | 240x216 | P | | Epson, IBM Pro |
| Tandy Corp. DMP 2120 | \$1,599 | Std | Std | \$1,599 | 24 | 240 | 80 | Wide | 0 | no | N/A | P | | Tandy DMP 2110, IBM graphics |
| Texas Instruments Model 875 | \$799 | Std | \$100 | \$899 | 24 | 240 | 80 | Narrow | 7 | yes | 180x180 | P | S | Epson LQ1500 |
| Toshiba America Inc. Toshiba P351SX | \$1,499 | \$239 | Std | \$1,738 | 24 | 360 | 120 | Wide | 32 | yes | 360x360 | P & S | | IBM Pro, Toshiba, Qume |

INK-JET PRINTERS

| Company Model | Price | No. jets/ nozzles | Speed (cps) | | Cartridge Type | Tractor | Printer Buffer (K) | Maximum Graphics Resolution ⁴ | Interfaces | | Printer Codes Compatible With |
|--|---------|-------------------|-------------|----------|----------------|---------|--------------------|--|------------|------|---------------------------------------|
| | | | Draft pica | NLQ pica | | | | | Std. | Opt. | |
| Canon Inc. PJ-1080A | \$699 | 4 | 37 | 37 | Narrow | N/A | 2 | 72x72 | P | | Canon |
| Hewlett Packard PaintJet Color Graphics Printer | \$1,395 | 70 | 167 | 167 | Narrow | Std | 8 | 180x180 | P/S | | Printer Control Language |
| IBM Color Jetprinter | \$745 | 4 | 33 | 20 | Narrow | Std | 0 | 100x96 | P | | IBM |
| Xerox 4020 | \$1,495 | 20 | 40 | 20 | Narrow | Std | 6 | 240x120 | P | S | Diablo C150, Xerox 4020 |

THERMAL-TRANSFER PRINTER

| Company Model | Price | Speed (cps) | | Cartridge Type | Tractor | Printer Buffer (K) | Maximum Graphics Resolution ⁴ | Plug 'N PRINT module for . . . | |
|-----------------------|-------|-------------|----------|----------------|---------|--------------------|--|---|--|
| | | Draft pica | NLQ pica | | | | | | |
| Okidata Okimate 20 | \$268 | 80 | 40 | Narrow | Std | 8 | 120x144 | Amiga, Apple II, Atari ST, Commodore 64/128, IBM PC | |

KEY: cps = characters per second; IBM Pro = IBM ProPrinter; N/A = not available; NLQ = near-letter-quality; opt. = optional; P = parallel; pica = 10 characters per inch; S = serial; P&S = parallel and serial; P/S = parallel or serial; std. = standard; ¹ Printer without color option or tractor (unless it's included); ² Price includes color option and tractor; ³ Some vendors refer to NLQ as LQ (letter quality); ⁴ Measured in dots per inch (horizontal-by-vertical); ⁵ Serial version for \$975.

MANUFACTURERS

Alps America, 3553 No. First St., San Jose, CA 95134, (800) 828-2577; Apple Computer Inc., 20525 Mariani Ave., Cupertino, CA 95014, (408) 996-1010; Brother International Corp., Printer Div., 8 Corporate Place, Piscataway, NJ 08855, (201) 981-0300; C. Itoh Digital Products, Inc., 2505 McCabe Way, Irvine, CA 92714, (714) 660-1421; Canon USA Inc., Systems Div., One Canon Plaza, Lake Success, NY 10042, (516) 488-6700; Epson America Inc., 2780 Lomita Blvd., Torrance, CA

90505, (213) 539-9140; Genicom Corp., One Genicom Dr., Waynesboro, VA 22980, (703) 949-1031, (800) 443-6426; Hewlett-Packard Corp., 3000 Hanover St., Palo Alto, CA 94304, (800) 858-8867; IBM Corp., Old Orchard Road, Armonk, NY 10504, (800) 447-4700; NEC Information Systems, 1414 Massachusetts Ave., Boxborough, MA 01719, (800) 343-4418; Okidata Inc., 532 Fellowship Rd., Mt. Laurel, NJ 08054, (800) 654-3282; Seikosha America Inc., 1111 MacArthur Blvd.,

Mahwah, NJ 07430, (201) 529-4655; Star Micronics, 200 Park Ave., Suite 3510, New York, NY 10166, (212) 986-6770; Tandy, 1700 One Tandy Center, Fort Worth, TX 76102, (817) 390-3011; Texas Instruments, Inc., 13500 N. Central Express, Dallas, TX 75222, (800) 527-3500; Toshiba America Inc., Information Systems Div., 2441 Michelle Dr., Tustin, CA 92680, (714) 583-3000; Xerox Corp., Xerox Sq., Rochester, NY 14644, (800) 832-6979.

PLOTTERS: FOR GRAPHICS ONLY

For most users, color printers are a good compromise—they produce black-and-white text for reports and correspondence, and they can turn out a presentable color chart for your next meeting.

But, if color charts and overheads are big in your overall game plan, then you'll want to look at a color plotter. A plotter uses pens, usually felt tip, to make images. A plotter's vivid colors and smooth lines, ovals, and circles show up equally well on paper or acetate film.

Lower-priced models have one or two pens that are controlled by your com-

puter's software to draw the designed image. These machines will stop and signal you to change to a different color pen. More expensive plotters contain enough pens to produce richly colored output and will change pens automatically.

Of course, plotters require different kinds of print codes from those needed by color printers. Make certain that your software supports color plotters, usually with the Hewlett-Packard Graphics Language (HPGL). For plotters, HPGL is equivalent to an Epson code for a dot-matrix printer or a Diablo code for a daisy-

wheel printer. Two choice Hewlett-Packard plotters are the HP 7475 (\$1,895) and the HP ColorPro (\$1,295).

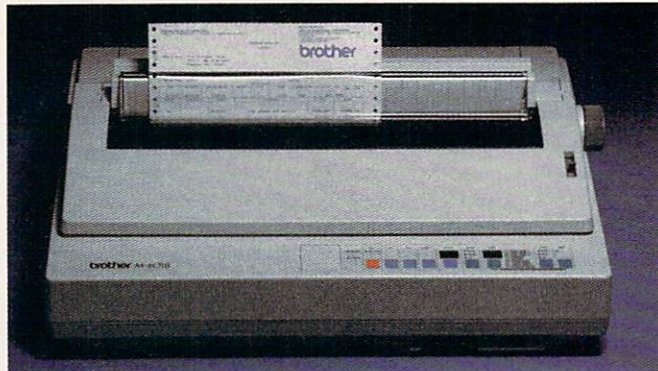
Color plotters have been very popular for producing color output for presentations but recently have taken a back seat to color printers in popularity. Apple no longer makes plotters; IBM, however, does. Thanks to 24-pin dot-matrix and ink-jet printers, color printers have improved greatly during the past year or two, and they can produce both text and graphics. Plotters are strictly for producing charts and other graphic materials.

use heat rather than physical impact to create images on the paper. These printers use tiny heated wires to melt colored, waxy ink on the ribbon. The wax is then transferred to the paper. Thermal-transfer printers tend to produce brighter printouts than do dot-matrix printers and are better for filling in large areas. But they expend ribbons much faster. The most popular thermal-transfer printer for consumers is the Okimate 20 (see chart).

Ink-jet printers. Color ink-jet printers squirt tiny droplets of colored ink at the paper surface; this process is called *dithering*. Dithering allows some mixing of the ink colors, thus forming a more even color image. It sounds messy, but ink-jet printers are quite reliable and some produce very attractive printouts. Since ink-jets apply a liberal coating of ink to the surface, they are particularly well suited for printing on acetate transparencies for use with overhead projectors.



Okimate 20



Brother M-4018

PRINTER FEATURES

When deciding on which printer to buy, you should first determine how you want to use your output. If you want to print both regular text and color charts, then a dot-matrix printer is best. If you want to do color charts on both paper and acetate transparency, then choose between a thermal-transfer and ink-jet printer. Then, shopping within your chosen category, you can begin to look at the various features offered. Some of the more important ones are outlined here.

Color Option. To print color, you need a color ribbon. However, some printers require the purchase of a color kit.

Graphics Resolution. The more dots per inch (dpi) a printer puts on a page, the sharper the picture and the better the resolution will be. Generally, resolution is a function of the number of pins in the printhead. Notice on the chart, however, that some printers with fewer pins achieve the same or better resolution as printers with better printheads. That's because they do a double pass, which doubles the number of dots per inch, but significantly reduces speed.

Tractor. A tractor is needed for handling continuous-form paper. This is also another feature that is standard on some printers, but on others, it too must be purchased separately.

Buffer. A print buffer stores data so that your computer is freed for other tasks while your printer is in operation. Because color printing can be extremely slow, a buffer is more important for a color printer than for a regular printer. Most of the printers listed in our chart come with a buffer generally from 8K to 15K. Since graphics files take up much more memory than do text files, 8K may not amount to much. But most printer buffers can be expanded for an additional cost.

COLOR LASERS?

Color printers, for the most part, really aren't much more expensive than regular printers are. Many of the newer, high-density 18- and 24-pin models are quality performers, yet still cost less than \$800.

But color-print technology lags far behind color-display technology. Don't expect to see on paper the brilliant colors you see on-screen. To do that, color-print technology will have to advance significantly. Right now, color laser printers are entering the scene, but are prohibitively expensive (around \$30,000) and will be for some time. It's possible that high-quality thermal printers, now selling for around \$10,000, will eventually drop in price and bring professional-quality color printing into the hands of consumers. ■



After 30 years of marriage and a 9-to-5 workstyle, Michael and Evelyn Morales enjoy working together as an independent consulting team. The freedom to structure each day as it suits them, the couple says, is one of the main advantages of working at home.

High-Tech Mom & Pop

CORPORATE CHAINS SWALLOWED UP MANY FAMILY BUSINESSES; NOW A NEW GENERATION OF COUPLES IS WORKING TOGETHER—AT HOME

BY BARBARA STEIN

In this age of corporate mergers and takeovers, large and small companies are being scooped up at record speed. Even the corner grocery has not escaped. "Mom & Pop," the small-time operators of neighborhood stores and services, who stick in our minds like vivid Norman Rock-

well paintings, have been steamrolled out of business.

But they are being replaced by a new breed of Mom & Pop operations. Like millions of other computer users, today's Mom & Pop are redefining traditional stereotypes by using technology to start home-based businesses.

Working from home in well-equipped offices, these couples are free to compete in most corporate

arenas. While some couples cling to the traditional approach—pooling their efforts to run a single business—others prefer to run separate operations. Still others elect to run several enterprises simultaneously, joining efforts in some and remaining separate in others.

In choosing couples to profile, we've presented a cross section that reveals couples with differing personal situations, professional back-

Contributing editor BARBARA STEIN wrote "Corporate Homeworkers," which appeared in the January issue of FAMILY & HOME-OFFICE COMPUTING.

grounds, ages, number of years together, and reasons for going home to work.

A RELATIONSHIP ROOTED IN WORK:

SEBASTIAN ORFALI AND BEVERLY POTTER

Sebastian Orfali, 41, and his wife, Beverly Potter, 43, run five businesses from their Berkeley, California, home—and they plan to expand. Orfali heads And/Or Press, Inc., a publishing company he founded in the 1970s. Until four years ago, the press was housed in a 10,000-square-foot building and employed 20 people. "I had planned to form a joint company with others, but things got out of hand, and we ended up losing money," Orfali explains. "We scrambled, and I reorganized. Now I'm earning \$30,000 a year at home, and I'm the only employee. I'm making the same money I was earlier, and I'm a lot happier."

In 1983 he and Potter formed Ronin Publishing, Inc., a book-publishing company that later launched Books-by-Phone, a mail-order company that ships books anywhere in the world within three to five days.

Aside from her involvement with Ronin and its subsidiaries, Potter leads professional workshops for corporate managers and keeps tabs on her separately owned real-estate business.

How can one couple track five businesses simultaneously? "We're into telecomputing," Potter explains. "We have eight phone lines and four computers. We use subcontractors all over the country—freelance writers, editors, artists, distributors, and a wholesaler who also handles our accounting and record keeping." And because they live near the University of California's Berkeley campus, they have an "endless wealth of eager beavers" who can't wait to work for them. When the couple is traveling, the students oversee Books-by-Phone.

Does the couple ever turn off the work? Orfali laughs. "I do more than my share of errands, perhaps as a motivation for getting out of the house," he confides. "There's so much going on all the time, it's sometimes hard on us, but overall it's strengthened our relationship. It could be detrimental to couples who hate their work, especially if they're only in it for the money. But with us, the work recharges our batteries."

Potter agrees. "Our relationship is rooted in the work. We don't separate



Making people feel at home in their San Diego bed-and-breakfast is business for Rosemary Johnson and Ron Risley.

the two, but use it to generate fun." Recently the pair drove to Malibu to meet with an author. "It was like a vacation, but we brainstormed all the way down," says Potter. "Our biggest problem is getting away from work."

LIVING AND WORKING IN TIGHT QUARTERS:

ROSEMARY JOHNSON AND RON RISLEY

Guests entering The Edgemont Inn, a four-bedroom bed-and-breakfast located in San Diego, California, feel as if they've stepped back in time. Innkeeper Rosemary Johnson, 39, has overlooked no detail in restoring her home to turn-of-the-century elegance. Antique rugs cover polished oak floors. Plush wing chairs and a tapestry-covered settee flank the parlor's fireplace. Even the grand piano is framed by lace-covered windows and French doors. Everything is in keeping with the period—all but two Macintosh computers, an ImageWriter printer, and a Canon personal copier.

"My computers run the inn," says the affable Johnson, a former intensive-care coronary supervisor who took her sister's advice to surround herself with "happy people" when she started to burn out two years ago.

Johnson tracks guests and travel agencies with *OverVUE* (a database manager from ProVUE Development Corp.) and depends on *SuperPaint* (Silicon Beach Software) and *MacWrite* (Claris Corporation) to produce the inn's brochures, city maps, mailers, and gift certificates. She asks, "Can you believe I never touched a computer before Ron showed me the Mac?"

Johnson is referring to Ron Risley, 30, a freelance software developer who created the shareware products

Backdown and *Immortality* for the Macintosh. The couple met in late 1986 when Risley was a guest at The Edgemont. Risley later relocated from Orange County.

"The office environment has never been my favorite," Risley explains. "No matter where I worked, I always ended up doing a lot at home. So when I started using electronic mail, I saw less and less reason to go out."

Today his home office is adjacent to the stairway alcove where Johnson's check-in desk and computer are located; the pair is separated by a glass door. "Guests are always curious about my setup [a Macintosh Plus with an 80MB hard-disk drive] and because my office is off the kitchen, they can look in to see what I'm doing," says Risley. In addition to regularly updating his shareware products and accompanying user manuals, he also performs contract work for the corporate sector, designing telecommunications programs.

As romantic as running an inn sounds, Johnson and Risley are quick to point out the drawbacks. "It does put a cramp in our personal lives. One problem is that our bedroom and Ron's office are our only

LIVING AND WORKING TOGETHER: PROS AND CONS

Whether the move home came as result of mid-life crisis, corporate burnout, divorce, new baby, career plateau, or layoff, there is agreement on several points: 1) In forming the business relationship, the love relationship grows and strengthens; 2) The sense of freedom in taking charge of work and family life boosts feelings of self-worth, promoting contentment and happiness; 3) The personal computer and related high-tech tools play a pivotal role in developing and sustaining the work style; and 4) Once bitten by the lifestyle, no one can imagine working as an employee again.

Of course, it's not all a bed of roses. As Sebastian Orfali points out: "Working from home is a double-edged sword. You're always on and never off. You roll out of bed, and your desk is ten feet away."

Then there's the delicate issue of spending 24 hours a day with your mate. "When two people work together at home, it's inevitable that one will be tired or crabby sometimes, and there will be disagreements," Linda Behling confides. "But you can't brood about things, you carry on."

Beyond that are the enormous responsibilities and pressures that come as a result of self-employment. Being free to schedule work as well as leisure hours can be stressful. The trick is striking the right balance and discovering what works best for you, your business, and your relationship.

living spaces, spots where we can be alone. When I'm between guests or after I've finished the baking [Johnson bakes her own biscuits, cakes, and muffins and serves omelets, quiches, and snacks daily], I'll sit in Ron's office while he works. We don't have enough time together."

Still, despite their hectic lifestyle, Johnson and Risley have no intention of giving it up.

AFTER 30 YEARS OF MARRIAGE, A BUSINESS RELATIONSHIP:

MICHAEL AND EVELYN MORALES

Empty nesters have different reactions when their children leave home. Some just carry on, and others discover too late that they've grown apart or that children were the mainstay of the relationship. Still others, like Michael and Evelyn Morales of El Cajon, California, embrace the change, seizing the opportunity to rediscover one another as individuals—and start a business at home.

"It's been like a second honeymoon," says Michael, 57, a former stockbroker and communications consultant for the University of California's 19 campuses. "I've always worked outside the home and in 30 years of marriage rarely even had lunch with my wife. So we're enjoying our love and togetherness. It's immensely rewarding being able to explore that without being retired. But I was apprehensive at first. I didn't know if Evelyn could take 24 hours of me every day."

Evelyn replies, "There haven't been any difficulties. Michael is so much more relaxed now that he's home. And you've got to remember how long we've been married and realize that we've always enjoyed being with one another. We don't have to be talking or even in the same room. After raising four kids it's taken a long time for us to reach this stage. It's the togetherness that counts. The change has been positive."

Michael confesses that he's always wanted to be an independent consultant but waited until the timing was right. "Last year I figured I was in a position to sustain myself," he explains. "The children had flown the coop, and it was easy to start a new venture." So he and Evelyn, 54, sold the family homestead, built their dream home on a two-acre lot, and founded Morales Telecom & Associates, a telephone and data-communications consulting company.

"We work as a team," says Evelyn. "Of course there are times when Michael is on the phone for long peri-

ods, and I do my own thing. But I'm there when he needs me to discuss new ideas, answer phones, and type. The computer is new to me, and I'm still learning, but the more I learn, the more I'm intrigued."

Michael's requests for proposals (RFPs) are revised and updated on an IBM PC compatible with a 30MB hard-disk drive and printed with an Alps ALQ-200. Spreadsheet analysis for comparative work and cost and vendor modifications are accomplished with Lotus 1-2-3. "Ledger sheets are too labor-intensive," says Michael. "I do it with the computer."

"The best part about working at home is that we have the whole day to ourselves," says Evelyn. "It doesn't matter if we work during the day or at night. We always find enough hours to do what we want."

TWO BUSINESSES, TWO CHILDREN UNDER SIX:

HANS AND LINDA BEHLING

Passersby have no hint of the flurry of activities going on inside the Behling house in Wood Dale, Illinois. Outwardly, the home appears to house a traditional family. Most days a small boy is playing on the spacious back porch and Mom, one assumes, is within earshot. In reality, both parents are nearby.

Linda, 37, is set up in an office near the front door, operating Behling Secretarial Service. Hans, 38, a computer consultant with 14 years of experience in the travel industry, specializes in travel and meeting planning and sales-incentive contests. His office is in a converted bedroom upstairs.

An experienced legal secretary and paralegal, Linda is accustomed to shifting gears on short notice. "We go with the flow," she says. "We never know from one day to the next what we'll be doing, and we're constantly resetting our priorities. One minute I have time to make a grocery list or mop the floor, and the next minute the phones are ringing, clients appear at the door, and the kids need something. It changes hourly."

Clearly, the Behlings take everything in stride. Although Teddy, 5, attends nursery school one day each week and visits Hans's parents two days a week, he and brother Thomas, 2, spend most of their time at home. "What's really helped is the designated play areas we set up for the kids," Hans explains. "We've separated the house and office areas, but the playroom is multifunctional. The kids like to play on the conference table,

but when we need the room for meetings, we throw their toys into the storage cabinets."

Although child care and household chores are equally divided, Hans and Linda see little of each other during the day. "Hans is already at work when I wake the kids, feed them, and deposit Thomas in his playroom before going to my office," says Linda. "At lunchtime, I'll slap sandwiches together and coordinate the meal around opening the mail, so I can make productive use of the time. By 5:30 p.m., I wrap up my work, start dinner, and toss in a load of laundry while Hans takes over with the kids."

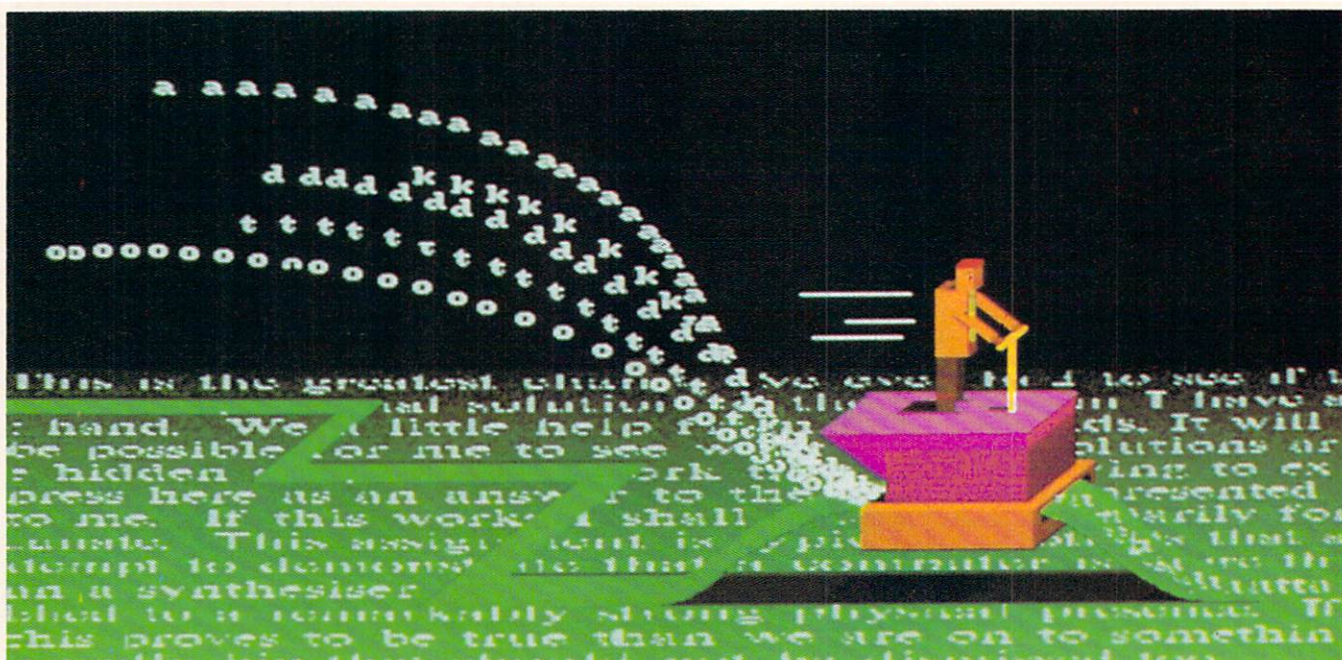
Hans came home to work four years ago, after leaving the airline industry to start a venture-capital operation with colleagues. "When that folded," he says, "I began consulting and eventually got involved with the meeting and incentive business. I felt that I'd picked up enough skills to run my own business, and I preferred the flexibility of setting my own schedule."

Summing up the past five years, Linda says that bringing the businesses home has meant little change in the couple's lifestyle. "We tend to be homebodies so the whole thing was pretty natural for us," she explains. "There was never any doubt that I wanted to be home with the baby. And since I already had the typewriter, I added a business line, answering machines, and a Canon FaxPhone 10. Hans set me up with computer equipment. I can see and hear the kids while I'm working on mailing lists, directories, and technical manuals."

"As for the kids," Linda adds, "I've never hovered over either of them, and they're both independent. We run in, give them hugs, bring snacks, and go back to work. We probably spend more time with our kids than most working parents."

ENTREPRENEURIAL TIDAL WAVE

These high-tech Mom & Pop operations are part of a tidal pull sweeping the nation—an entrepreneurial spirit bolstered by microcomputer technology. In describing their lifestyles, couples frequently use words like *self-fulfillment*, *personal growth*, *challenge*, and *control* (over work and family life). There's a common belief that today's career should be financially as well as emotionally satisfying. And not necessarily in that order. Viewed in this manner, the advantages of such lifestyles soon become obvious. ■



In part 1 last month, we saw how to speed up our work in creating completely formatted documents, thanks to a division of labor: Simply separate the act of writing from the task of formatting. The methods we examined were "style tags" (codes, such as **&Q&** or **@MAJOR@**, put in a paragraph to represent the specific text formats) and "block files" or "format files" (often-used text or formatting codes saved to individual files on disk and loaded into your document as needed).

MERGING STYLE TAGS

In fact, the concepts of style tags and format files can be combined to create documents that automatically style themselves.

Many word processors have the capability—often called *mail merge*—to combine documents and lists of names and addresses. Although this feature is most commonly associated with mailing labels and form letters, the operation can be applied also to basic formatting tasks.

There are two ways in which this can be done. The first uses several individual files stored on disk, one for each type of format (normal paragraph, quotation, and so forth), and each containing only format codes (strings of instructions). The second uses just two files, one for the text

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Timesaving Techniques for Word Processing

LET THE COMPUTER DO THE WORK! PART 2 BY ROB KRUMM

itself—your document—and one for all the formats needed in that document.

At first, the idea that mail merge can be used to format a document may seem strange. But the principle is the same as that of the separate format file. In both cases, you store formatting codes in the same way that you would text. In this instance, instead of merging such text as names and addresses, you merge your particular format instructions.

Method One. Suppose you created three files that contain the margins and tab settings you use for regular paragraphs, quotations, and special notes. The file names could be **PARA**, **QUOTE**, and **NOTE**, respectively. Whenever you want to change the format of a paragraph, you can insert a merge code that places one of those three specified files into the document during the merge process. For example, depending on the word processor,

you might insert **"QUOTE"** before the text to format a quotation. During a mail-merge operation, that would merge the file named **QUOTE**, containing the formatting instructions, into your document. (See Figure 1.)

Such merge commands are available in *WordPerfect*, *WordStar 2000*, *Microsoft Word*, and many other word processors. Thus you can format a document by entering the merge code (**"P"** in our example) and the name of the file that contains the appropriate formatting. When you want to create the final document, merge the document file with the format files, which creates a new, separate file—one in which the document is joined with format codes.

This method has several advantages. First, it saves you the time and trouble of entering individual formatting commands. Second, you can change the formatting of any document that uses the same format files

by changing one of the format files (PARA, for example) and running the documents through the merge operation again. Since the merge automatically inserts the codes, you don't need to make any manual entry. Using this strategy, the style tags I mentioned last month would essentially be made into merge instructions to insert files.

Method Two. A variation on this theme is to create a single data file that contains only a series of formatting codes and no text. In most word-processing mail-merge situations, a data file is constructed of a series of items—such as last name and street address—that are to be inserted into a form letter. The common computer term for each item is a *field* or *variable*.

But with many word processors, there is no reason why the fields or variables cannot carry formatting instructions instead of names and zip codes. For example, field 1 might contain the instructions to indent margins, field 2 might change the font to compressed printing, and field 3 could boldface the text.

When you are entering the text of your document, instead of entering the actual formatting command, you would enter the merge code for the appropriate field. The document can then be merged with the data file. However, the process will insert format instructions—not names and addresses—into the text, and in so doing automatically format the document.

The advantage of using merge fields instead of separate merge files is that fields can be merged inside paragraphs and files cannot. This method is necessary when a format requires two codes, a beginning and an end, to operate. For instance, many programs (and printers) require one code to begin the underline and another to end the underline. When you merge a format file you cannot place these codes within a paragraph. Merge fields, however, can appear anywhere in the text, not just at the beginning or end of paragraphs.

This technique also allows you to quickly change the formatting style of an entire document. By changing part or all of the codes in the merge list data file, the text can be reformatted automatically by simply re-merging it.

The merge techniques have the added advantage of not altering the original document with the style codes. Merging creates a new file or printout but does not change the

original document. You can merge different styles to the same document until you have achieved the desired results.

TOKENS AND ABBREVIATIONS

The ideas presented so far have all centered around methods of indirectly applying formatting commands to a document in an automated fashion. This theme can also be applied to the entry of text by using two common but powerful features—replace and spell checking.

Let's start with the replace command, also called search-and-replace. This is the means by which you tell your program to search for one word or group of words and replace it with another word or group of words.

Let's say you created a document in which you made references to *WordPerfect* when you meant to write *WordStar*. You would search for "WordPerfect" and tell the program to replace it with "WordStar." This is a very handy tool. So handy, that it's a shame to reserve it for those occasions when you want to change all of the names of items to other names. You can take advantage of search-and-replace by deliberately creating abbreviations or "tokens" within your document. For example, instead of typing *WordStar*, enter *ws*; instead of *WordPerfect*, enter *wp*. In fact, whenever you find a word or phrase that occurs often, create a token for it and simply enter that token each time. But you have to be very careful that the token isn't found in *any* other form elsewhere in your text.

When the document is complete, you can use the replace function to expand your tokens automatically. This method speeds up text entry and cuts down on typing errors. You can even use tokens for common words such as *the* and *you* with rarely used single characters such as the backslash (\). If you have macro capabilities on your computer, you can create a macro that will automatically perform a series of replacements to change your standard tokens into full words.

SPELLING CHECKS IT OUT

Spelling checkers, one of the most popular features added to word-processing packages in recent years, identify and help correct many typing mistakes. In fact, deliberately making more "mistakes" is a good way to take advantage of your spelling checker. Use the token, or abbreviation, technique described above, making sure that your abbreviation is not a real

word. Make it a habit to use only consonants or add the letter Z to each token to ensure that the spelling checker will consider the abbreviations as mistakes. (See Figures 2 and 3.)

Using the spelling checker to perform replacement of abbreviated words and phrases has some advantages over search-and-replace. Spelling checkers function as a kind of multiple search-and-replace operation. Usually, when you correct the first instance of a misspelling, you have the option of allowing the program to automatically make the same correction throughout the document. For example, when you encounter *wp* for the first time, you would tell the program that the correct spelling is *WordPerfect*. When you encounter *ws*, you would specify *WordStar* as the correct spelling. The spelling checker will replace both abbreviations as it passes through the text. Because it needs to pass through the document only once to change all the abbreviations, the spelling checker speeds up your work much faster than multiple search-and-replace operations would.

Another benefit of the spelling checker is that it will find all of the abbreviations for you. With a search-and-replace, on the other hand, you might forget to search for all your abbreviations; the spelling checker brings every abbreviation to your attention.

The use of tokens and abbreviations can increase your productivity by saving you a great many keystrokes. It is another instance where you can turn over at least some of the work to the computer.

IMPORT INSTEAD OF TYPING

Even though word processors have a great many features, there are still some applications that can be better handled by spreadsheets or databases. Choosing the right program for the right job avoids wasted time. You can save considerable effort by transferring the data between spreadsheet or database and word processor. It is not unusual in many offices to waste time by retyping spreadsheet data into word-processed documents so that the data can be combined with paragraph information and formatted with underlines and boldfacing.

Today, more word processors are being supplied with direct import facilities for spreadsheet data. But you can still achieve a large degree of integration by exchanging data between programs in the form of text files. For

FIGURE 1.**MERGE CODES
INDICATE WHERE
FORMAT FILES
SHOULD BE
INSERTED**

'PMAJOR'THE WORLD'S SMALLEST NATION
 'PSUB'ABOUT ANDORRA
 'PPARA'
 In a world of powers and super-powers that fight to be the
 largest and most powerful nations, somebody has to be at the
 bottom of the ladder. That nation is the tiny republic of
 Andorra.
 'PQUOTE'
 The nation of Andorra is officially called the
 Valleys of Andorra. The nation is located in the heart of
 the Pyrenees Mountains between the better-known nations of France
 and Spain. Andorra marks the beginning of the Iberian peninsula.
 'PMAJOR'VITAL STATISTICS
 'PSUB'POPULATION
 'PNOTE'
 The 35,000 people of Andorra live on 188 square miles
 of land. That is a population density of about 180.85 people per
 square mile. The United States has an average population of
 about 65 people per square mile, the Soviet Union 30 people per
 A:\ANDORRA.WP Doc 1 Pg 1 Ln 5 Pos 10

Figure 1: You can use a word processor's mail-merge function to insert formatting instructions—such as margins, tabs, and italics—into your document, not just the usual names and addresses. This method saves time and allows you to try out various formats without changing your original document.

FIGURE 2.**ABBREVIATIONS
USED IN TEXT.
AZ-ANDORRA,
NZ-NATION,
FZ-FRANCE,
ETC.**

THE WORLD'S SMALLEST I.Z.
 ABOUT AZ
 In a world of powers and super-powers that fight to be the
 largest and most powerful NZs, somebody has to be at the
 bottom of the ladder. That NZ is the tiny republic of
 AZ.
 The nation of AZ is officially called the Valleys of AZ.
 The nation is located in the heart of the Pyrenees Mountains
 between the better-known nations of FZ and SZ. AZ
 marks the beginning of the Iberian peninsula.
 VITAL STATISTICS
 POPULATION
 The 35,000 people of AZ live on 188 square miles
 of land. That is a population density of about 180.85 people per
 square mile. The United States has an average population of
 about 65 people per square mile, the Soviet Union 30 people per
 A:\ANDORRA.WP Doc 1 Pg 1 Ln 5 Pos 10

FIGURE 3.**FINAL TEXT
CONTAINS
EXPANDED
ABBREVIATIONS**

THE WORLD'S SMALLEST NATION
 ABOUT ANDORRA
 In a world of powers and super-powers that fight to be the
 largest and most powerful nations, somebody has to be at the
 bottom of the ladder. That nation is the tiny republic of
 Andorra.
 The nation of Andorra is officially called the Valleys of Andorra.
 The nation is located in the heart of the Pyrenees Mountains
 between the better-known nations of France and Spain. Andorra
 marks the beginning of the Iberian peninsula.
 VITAL STATISTICS
 POPULATION
 The 35,000 people of Andorra live on 188 square miles
 of land. That is a population density of about 180.85 people per
 square mile. The United States has an average population of
 about 65 people per square mile, the Soviet Union 30 people per
 A:\ANDORRA.WP Doc 1 Pg 1 Ln 5 Pos 10

Figures 2 and 3: Inserting abbreviations for frequently used words can be a real timesaver. In the example above, "nation" is represented by NZ. When you've finished writing, you can use either the search-and-replace function or a spelling checker to expand the abbreviations into complete words.

example, most spreadsheets are capable of directing information normally sent to a printer to a file on the disk. The important difference between a normal spreadsheet print-output file and a spreadsheet file is that the print-output file is in a format directly accessible by your word processor.

This makes sense when you think about it. Since all of your programs print on the same printer, they must at some time convert the data into a form the printer understands. This format is called ASCII (American Standard Code for Information Interchange). If you capture that data as

text in a file rather than send it to a printer, you can insert it into a word-processing document. Of course, your word processor must be able to read these standard ASCII-format files (also called *text files*), but most can, and the few that can't invariably have a conversion program that makes it possible.

The same applies to databases. Programs from *pfs:Professional File* to *dBase III Plus* can all print reports and lists as text files rather than as printed information.

You can use the block file insert command we discussed last month to load the text of the spreadsheet or

database print-file into your document. There are multiple advantages to this technique.

- You save time by not having to duplicate entry of data already stored in another file by another program.

- The information is more accurate. By direct transfer you eliminate errors that occur when you attempt to transcribe the information.

- Even the best word processor is no match for a spreadsheet when it comes to entering data in columns. By creating columnar information in a spreadsheet, you do the job quicker than you could using a word processor alone.

- You can add such formatting as bold, italic, or underline to spreadsheet data. Most spreadsheets, with the exception of such programs as *Excel* or *MacCalc*, don't have a facility for adding these enhancements.

If you are not sure about how to create text files from your spreadsheet or database, you will probably find that it is well worth the small effort of looking through your program's manual to learn. You can then use the right tool for the right job and still combine all of the pieces into one document.

COMMON THEMES

The ideas and techniques presented in both parts of this article have two major points in common:

Let the Computer Do It. Whenever possible, try to avoid performing tasks manually. This is especially true when it comes to tasks that require repeated implementation. If you can turn the task over to the program, you will have it done faster, with better accuracy and consistency, and—just as important—you will have given yourself more time to concentrate on the writing itself, a job that only people can do.

Names Are Misleading. Many operations have names that indicate only one of their possible uses. Merge or mail-merge operations are usually associated with form letters. But the ability to merge text from one or more files can have various uses, only some of which are discussed in this article. And spelling checkers aren't only for correcting accidental spelling errors. When you are looking to improve your word-processing technique, try to keep an open mind about the capabilities of a command or function. You may find that you can apply the operation in a way different from that suggested by the name of the command.

In the end, remember to feel free to use your imagination. ■



Home-Office SHOPTALK

BY JOANNE H. PRATT

AN EXPERT'S ADVICE ON STARTING, EXPANDING, AND MAINTAINING A HOME-BASED BUSINESS

Business or home? The first impression you communicate over the telephone can determine your business success.

"Home" noises—radios or TVs, barking dogs and crying babies—make it difficult for you to hear the other person. And those extraneous sounds can also damage your business credibility. So put the dog out during business hours, and don't let the children answer your office phone.

Listen to yourself and to the people who call you. Model your own telephone manners after the people who win your confidence when you call a business.

Most of us could improve our telephone image. *Consistently* be confident, helpful, and friendly as you talk on the phone. *Always* keep pen and paper within reach to take notes. If you can't answer a question, don't be afraid to say, "Let me think about that and call you back."

Remember—you'll never have the chance to make a second first impression.

Q: I'm interested in publishing greeting cards that I designed. Where can I get background information on the greeting-card business? B. HARLEE, Baltimore, Maryland

A: Here are a few resources I wish I had known about when I tried to market greeting cards. For better luck than I had, send a self-addressed, stamped envelope to the Greeting Card Association, 1350 New York Ave. N.W., Suite 615, Washington, DC 20005 ([202] 393-1778). Ask for their publications order form. You might find *Starting a Greeting Card Business* (\$35 plus \$3 shipping) and *Artists and Writers Market List* (\$5), which lists companies that buy designs from freelancers, particularly helpful.

If you're really serious about getting into this very competitive field, Marianne McDermott, the executive vice president of the Greeting Card Association, urges you to attend the National Stationery Show where you can meet independent sales representatives and other people in the field. The annual trade show is held in New York City the third week in May. Contact George Little Management ([212] 686-6070) for details.

Q: At present, I am conducting research for a local doctor who wants information on the best software for his office. My main goal, however, is to serve clients with bookkeeping and word-processing needs by tutoring their employees. Is there a specific book or catalog that lists all software available for specific businesses, not just for the medical profession? T.S. GIBNEY, Nokomis, Florida

JOANNE H. PRATT, president of Joanne H. Pratt Associates, Dallas, Texas, has 28 years of experience in operating home-based businesses. Her company conducts research and consults for private and government clients.

A: Most publishers have dropped their software source-books because they were so difficult to keep up-to-date. However, *The Datapro Directory of Microcomputer Software* is an excellent resource, updated monthly, and available in a three-volume, three-ring binder (Datapro Research Corp., 1805 Underwood Blvd., Delran, NJ 08075; [800] DATAPRO). That timeliness costs \$717 per year, but the periodical may be available in your library.

You'll find several pages of medical, dental, and real-estate software in the 1987 edition. Brief descriptions of each package include the number of users—information that I find particularly helpful for selecting products to look into further.

If your clients are Macintosh owners, check the *Macintosh Buyer's Guide*. Published quarterly, the magazine lists software for specific applications, including health-care management, real estate, business or sales, and engineering. Subscriptions cost \$14 a year (Redgate Communication Corporation, Beachland Financial Center, 660 Beachland Blvd., Vero Beach, FL 32963; [800] 826-9553; in FL, [305] 231-6904).

Q: I'm interested in using my computer at home to do bookkeeping for small-business clients. I have a Leading Edge Model D computer and am considering buying the Peachtree Accounting Software to help me start. Can you recommend a good way to find clients? And what relevant books do you suggest I read?

L. STORTZ, St. Petersburg, Florida

A: Take advantage of the April 15 income tax filing deadline to pick up overflow business from established accounting firms. If you can help out one or two companies on an on-call basis, you will earn a beginning income—and a place in their hearts.

At the same time, reach prospective clients by joining organizations of small-business owners. Referrals will be your best source of business, as they are for all self-employed professionals. Write a thank-you letter to anyone who gives you a lead, so they will think of you the next time, too.

As for reading, *Homemade Money*, by Barbara Brabec (Betterway Publications, Inc., P.O. Box 219, Crozet, VA 22932), will help you. Start with the resource directory, which is worth the \$14.95 price of the book. Brabec recommends *Establishing an Accounting Practice* from the Small Business Reporter Series, which you can order for \$5 postpaid (Bank of America, Dept. 3631, P.O. Box 37000, San Francisco, CA 94137) and *Marketing Accounting Services* by Robert W. Denney (Van Nostrand Reinhold, 1983, \$30.95).

Then follow the detailed procedures to set up your home-based business. To project a professional image, try Brabec's tips on designing your letterhead and promotional materials. ■

USING HYPERCARD

A SPECIAL TUTORIAL

How To Make Your Own "To-Do" Stack

BY DAVID HALLERMAN

Everybody has lists of things to do. Many of us choose to keep track of all of our tasks with pad and pen, but I find it better to automate my to-do list. You might, too. This month, you can get into HyperTalk scripting by typing in the complete to-do stack listed below.

This interactive stack gives you eight lines per card to note tasks, plus a check box for each one. Every time you create a new card—which is done by simply clicking on the to-do stack's icon button—the script inserts the current date onto the new card and automatically carries over all the tasks that haven't been checked off from your old card.

Here's how you begin.

THE BACKGROUND SCRIPT

1. Go to the last card of your Home stack and make sure your user level is set to "Scripting."

2. Choose "New Stack . . ." from the File menu.

3. Click on the check box called "Copy Current Background"—making it empty—so that you have a new background and a blank screen.

4. Give this new stack a name, such as "To Do Today"; then click on the "New" dialog button.

5. Go to the Objects menu and choose "Bkgnd Info . . ." to bring up the background information box.

6. Click on the dialog button "Script . . ." in the background information box to access the background script editor box.

7. Type into that box the two message handlers listed in figure 1. Be sure to key them in exactly as they appear. The first handles the message "newCard" (which is the message that is sent to HyperCard whenever you create a new card). The second handles a "mouseUp" mes-

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A completed "To-Do" stack lets you keep track of your tasks automatically. When you click on the to-do icon button in the upper-right corner, a new card with the current date is created, and all items that haven't been checked off are carried over to the new card. You can save or delete your old card.

FIGURE 1: BACKGROUND SCRIPT

When a new card is made, put "to-day's" date into the upper-left field, change the cursor into the watch, and go to the previous card (your old to-do card).

Repeat eight times: see if there is an undone task on the old card. If there is, copy it to the topmost blank field on the new card.

Ask if the user wants to keep the old card. End the "newCard" message handler.

When the mouse is clicked ("on mouseUp") anywhere on the card, see if it's clicked on one of the check boxes.

If there's no check mark (✓), put one into the box and lock the text so it can't be changed. If there is a check mark, delete it and unlock the text.

```
on newCard
  put "To Do:" && space into field "Today"
  put the date after field "Today"
  set the cursor to 4 -- the "watch" cursor
  set lockScreen to true
  put 0 into counter -- a zero
  go previous card
  repeat with X = 1 to 8
    put "Box" && X into oldBox
    put "Note" && X into noteName
    if field noteName is empty or field oldBox is not empty
      then next repeat
      add 1 to counter
      put field noteName into tempNote
      go next card
      put tempNote into field (counter * 2)
      go previous card
  end repeat
  answer "Do you want to save your old card?" with "No" or "Yes"
  if it is "No" then doMenu Cut Card
  go next card
end newCard

on mouseUp
  get the short name of the target
  if first word of it is not "Box" then exit mouseUp
  put it into clickBox
  put "Note" & space & second word of clickBox into noteArea
  if field clickBox is empty
    then
      put "✓" into field clickBox -- press OPTION-V for checkmark
      set lockText of field noteArea to true
      exit mouseUp
    else
      put empty into field clickBox
      set lockText of field noteArea to false
      end if
  end mouseUp
```


FIGURE 2: TEMPORARY BUTTON

Begin making the stack by showing and hiding various objects. Go into background mode.

Use the graphics tools to draw the card, including lines and drop shadows.

* Set the location for the first of eight note fields and check boxes.

Repeat eight times (through next two steps): create check box and note rectangle. Set text parameters for check mark (9-point Geneva bold).

Create field for to-do notes. Set text parameters for notes (9-point New York plain).

Set the location for the second through eighth note fields and check boxes (add to the numbers stated in step *).

Create the date field for the upper-left corner and insert the current date.

Create the to-do icon button for the upper-right corner. Give it a script that does the menu item "New Card."

Press OPTION-RETURN for "-" character.

Move the temporary button that made this stack to your Home stack. End the "mouseUp" message handler.

```
on mouseUp
  show menubar
  hide message box
  hide tool window
  set the editBgnd to true
```

```
choose rect tool
set lineSize to 1
drag from 18,26 to 490,328
choose bucket tool
set the pattern to 22
click at 1,1
set the pattern to 12
choose line tool
set lineSize to 4
drag from 25,330 to 491,330
drag from 492,31 to 492,330
set lineSize to 3
drag from 19,65 to 489,65
set lineSize to 1
```

```
put "50,100" into boxLoc1
put "65,115" into boxLoc2
put "50,100,65,115" into checkLoc
put "75,98,455,117" into fieldLoc
```

```
repeat with X = 1 to 8
  choose rect tool
  set the lineSize to 1
  drag from boxLoc1 to boxLoc2
```

```
choose field tool
doMenu New Field
put "Box" & X into boxField
put X into Y
if Y > 1 then add (X - 1) to Y
set name of field Y to boxField
set rect of field boxField to checkLoc
set wideMargins of field boxField to false
set textFont of field boxField to Geneva
set textSize of field boxField to 9
set textStyle of field boxField to bold
set lockText of field boxField to true
```

```
doMenu New Field
put "Note" & X into doField
set name of field (X * 2) to doField
set rect of field doField to fieldLoc
set style of field doField to rectangle
set wideMargins of field doField to true
set textFont of field doField to New York
set textSize of field doField to 9
```

```
add "25" to item 2 of boxLoc1
add "25" to item 2 of boxLoc2
add "25" to item 2 of checkLoc
add "25" to item 4 of checkLoc
add "25" to item 2 of fieldLoc
add "25" to item 4 of fieldLoc
end repeat
```

```
doMenu New Field
set name of field 17 to "Today"
set rect of field "Today" to 30,33,200,59
set style of field "Today" to shadow
set textAlign of field "Today" to center
set textFont of field "Today" to New York
set textStyle of field "Today" to bold
set lockText of field "Today" to true
put "To Do:" & space into field "Today"
put the date after field "Today"
```

```
doMenu New Button
set name of bgnd button "New Button" to "Make New Card"
set icon of bgnd button "Make New Card" to 4432
set style of bgnd button "Make New Card" to rectangle
set showName of bgnd button "Make New Card" to false
set rect of bgnd button "Make New Card" to 444,33,484,59
put "on mouseUp" & return & "doMenu New Card" & return & "end mouseUp" & return into makeCard
set script of bgnd button "Make New Card" to makeCard
```

```
choose browse tool
choose button tool
set the cursor to 4
set lockScreen to true
get location of me
click at it
doMenu Cut Button
go home
doMenu Paste Button
doMenu Back
```

```
show menubar
choose browse tool
end mouseUp
```

sage—that is, a mouse click (where the mouse goes down and then up).

8. Click on the "OK" button when you're finished typing in this script.

BUILDING A STACK WITH A SCRIPT

Now we will make a temporary button that will actually draw the "To Do Today" stack's background, set up its fields, and give you a button for creating new to-do cards.

1. Begin by choosing "New Button" from the Objects menu in the stack you just made.

2. Double-click on this new button to bring up its information box. Rename it as "To-Do Maker."

3. Now click on the "Script . . ." dialog button so that you can type in the script—consisting of a single "mouseUp" message handler—listed in figure 2. Again, key it in exactly as it appears.

4. When you're finished typing in this script, click on the "OK" button. Choose the browse tool from the Tools menu.

5. Now simply click on the button, sit back, and watch the screen. You should see *HyperCard* making the rest of the to-do stack.

6. You'll know this temporary button is finished with its tasks when today's date appears in the upper-left field and the "to do" icon button appears in the upper-right corner. (The temporary button itself can be found stored on the first card of your Home stack in case you need it again. If you wish, move it somewhere else.)

7. Type in anything you want in one of the eight rectangular fields. When you click on the small box to the left of that field, a check mark should appear and the text in the rectangular field will lock so that you cannot change it. If you wish to change it, just click on the check mark again. It will disappear, and you can now change the text.

8. When you need a new to-do card, click on the "to do" icon button. The current date will automatically appear on your new card, and any tasks you have not checked on the first card will be updated automatically onto your new card. You will also be given the opportunity to save or delete your old to-do card.

NEXT MONTH

Join us next month for another complete *HyperCard* script: type it in and learn. ■

PRODUCT REVIEWS

EVALUATIONS OF COMPUTERS, PERIPHERALS, AND OTHER HOME-OFFICE EQUIPMENT

Radio Shack CT-300 Portable Cellular Telephone

MANUFACTURER: Radio Shack, a division of Tandy Corp.

ADDRESS: 1700 One Tandy Center,
Fort Worth, TX 76102; (817) 390-3011

PRICE: \$1,499

Some professionals—particularly salespeople—say that cellular telephones are umbilical cords that connect them to their offices. I just don't know anyone who can say that with conviction.

I do, however, know cellular-telephone touters who are smitten by the luxury and convenience of telephones that go anywhere they go. And I know many others who lust for a cellular telephone—but won't buy until prices come down.

Cellular phones are often more entertaining than they are necessary; while telephone beepers symbolize job importance, portable telephones are a sign of extravagance and status. But there's nothing wrong with that. And folks (salespeople, real-estate brokers, and reporters, for instance) who seem to spend more time in cars, restaurants, meeting rooms, and telephone booths than at telephone-equipped desks can truly benefit from portable cellular phones, such as Radio Shack's CT-300.

Unlike car phones, portable cellular phones can be used anywhere. Some of these portables are briefcase-size, but others—like the Radio Shack CT-300—are much more compact because they have smaller and, thus, less powerful battery packs. If you're thinking about purchasing a cellular phone, the CT-300, with its superb features, small size, reasonable price, and full one-year warranty, may be the right choice.

Radio Shack CT-300. The CT-300 is a black, battery-powered phone that weighs less than two pounds and measures about 7-by-1-by-3 inches.

The unit consists of the transceiver, a battery pack, an antenna, and a carrying case with a strap. To recharge the battery, you need a Charging Stand (\$60) and an AC Adapter (\$19). A Mobile Mounting

Kit for a car costs \$25. A liquid-crystal display (LCD) shows such information as the number you're dialing and the length of your phone call. Memory dialing lets you store and dial up to 40 numbers by entering two-digit code numbers.

Operating the Phone. To hook up the telephone, I had to fill out a NYNEX application that was given to me by a Radio Shack salesperson. Once I'd filled out the application (it asks for account numbers, addresses, and telephone numbers of banks), Radio Shack called the information into NYNEX. I returned to Radio Shack the next day, and a salesperson plugged in some numbers and gave me my phone number. (Cellular phones have their own numbers, and bills are sent to a home or office address.) On the following morning, my telephone was working.

Cellular telephone service is now available in most regions of the United States. As long as you're making a call from a region with a cellular carrier, you can call anywhere in the world.

Cellular phones are slightly more complicated to operate than ordinary telephones: to turn on the phone, press and hold PWR for a second or two; to make a call, enter the phone number and press SND; when it's time to hang up, press END; to answer an incoming call, press SND; once again, press END to hang up.

They're also more expensive to use than the phones that plug into outlets. Rates differ depending on your regional phone company. In New York City, the monthly rate is \$29; each minute of an outgoing call (no matter where you're calling) costs an extra 55 cents during prime time and 35 cents during non-prime time.

To turn off the phone, press and hold PWR. However, turning off the phone is the equivalent of unplugging an ordinary phone. You'll probably want to turn the power off if you're going to leave the telephone behind or if you're not expecting a call.

Recharging the Telephone. The reason for turning off the telephone at all is simple. The phone's fully

This Radio Shack cellular phone weighs less than two pounds.



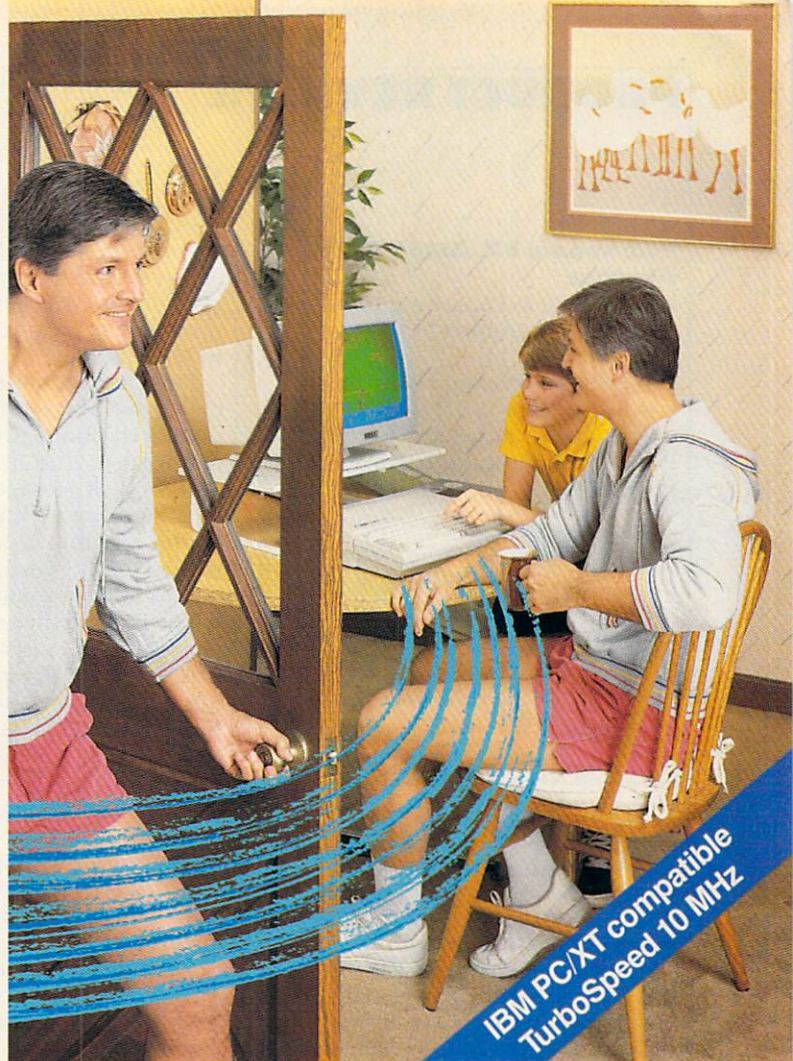
charged battery pack provides just one and a half hours of "talk time" or 15 hours of standby time (period when the phone is turned on but not in use). Although recharging the battery pack takes only an hour, if you're going away overnight you'll have to take the charging stand or an additional battery pack (\$60) with you. Or else you can set the CT-300 to automatically turn off if it isn't used for a selected number of hours (0–9).

Traveling with Your Phone. Unfortunately, although the CT-300 can travel everywhere you travel, it won't necessarily work. While I had consistently clear (although hollow-sounding) connections whenever I made or received a phone call, the phone didn't always function. I was unable to use the telephone in the New York City subway system or in tunnels, which didn't surprise me. But I couldn't make a phone call from a local restaurant and, one time, the phone cut me off as I walked down a street in Midtown. (This is probably due to all of the radio waves in New York City.)

But the phone usually worked just fine, and it charmed me. Friends and business associates were glad to call me, instead of my home or office; they could now get in touch with a hard-to-reach person almost anywhere, at any time. Having a telephone in my bag was a pleasure—well, except when it rang as I tried to do things like pay a cashier, hail a cab, or carry two bags of groceries. Now if only I could get my hands on a portable answering machine.

—BERNADETTE GREY

CIRCLE READER SERVICE 100



The personal computer built to go home, too.

The IBM®-compatible Laser Compact XT is powerful enough for the office and easy enough to use at home.

Most people take work home to keep ahead of their competition. The Laser Compact XT has the speed (10 MHz) and memory (512K expandable up to 1,640K bytes) to handle IBM-compatible software from Lotus 1,2,3® to games, and beyond. Its compact design with built-in handle makes it easy to carry home.

The Laser Compact XT has a built-in disk drive, serial, parallel, joystick, mouse and modem interfaces to hook up all your peripherals. The Compact XT gives you the choice of working with either a monochrome

or color monitor (CGA and Hercules®), and the XTE model is EGA compatible.

The Laser Compact XT combines performance and speed with a price that's easy to handle at under \$600. For more information on the Laser Compact XT and the name of your nearest dealer, contact Video Technology Computers, Inc., 400 Anthony Trail, Northbrook, IL 60062, or call (312) 272-6760. In Canada, call (604) 273-2828.



LASER COMPACT XT™

Manufactured by
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MAKING COMPUTERS AFFORDABLE

CIRCLE READER SERVICE 36

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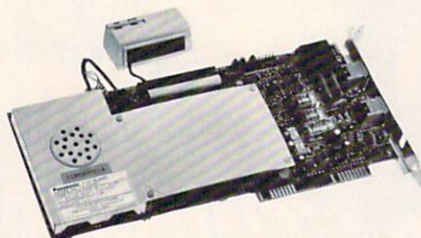
PRODUCT REVIEWS

Panasonic FX-BM89 Fax Partner

MANUFACTURER: Panasonic Industrial Company, Computer Products Division

ADDRESS: 2 Panasonic Way, Secaucus, NJ 07094; (201) 348-7000

HARDWARE REQUIREMENTS: 640K IBM PC and compatibles; hard-disk drive
PRICE: \$995



Fax boards let you send files directly from your computer.

In a business environment that demands nearly instantaneous movement of information to far-flung regions, a small business that can't afford the rates of overnight delivery services can be quickly left out in the cold. An alternative to the \$10-and-up-per-package fee charged by delivery services is to fax documents to your clients or business associates.

The per-page cost of faxing material is quite reasonable. Faxing information costs the same as a telephone call. Most fax machines take about one minute to send a page; therefore, a 10-page document could be sent from New York to Los Angeles (after 11 p.m.) for less than \$1.50. Another advantage of faxed material over electronically transmitted documents is that any kind of document, including drawings, can be sent. The output from the other end is an exact duplicate and requires no further handling.

Unlike a fax machine, a fax add-on board lets you send files directly from your computer—plus you can immediately save and/or manipulate documents that you receive from another location. On the downside, fax boards won't let you send documents that *aren't* saved on a computer disk or hard disk, unless you also use a scanner.

The Panasonic FX-BM89 Fax Partner, which I reviewed, is a facsimile add-on board that fits into a full-length expansion slot on any IBM PC or compatible. Like a fax machine, this fax board allows you to send

and receive facsimiles—text and images—to and from any Group 3 fax machine (which is the most common type of facsimile machine found in offices today).

The Fax Partner requires a hard-disk drive and 640K of memory; a dedicated phone line is highly recommended. And it needs almost 1MB of disk storage for its operating files. Admittedly, the package includes a graphics-editing program as well as a DOS shell, but it still consumes a lot of room.

The Fax Partner comes with complete instructions on installing the board in your computer and installing the software that makes the system operate. The software that runs Fax Partner is menu-driven and easy to operate. I sent my first fax without reading the hefty operations manual—although I had to browse through the manual to learn how to use all of the fax board's features.

An excellent feature of the Fax Partner is its ability to send and receive material in the background. This means that you can continue to use other programs while the Fax Partner is working. There are, however, some drawbacks. The Fax Partner software is memory-resident and is quite jealous of other memory-resident programs. It clashed with Microsoft Word 4.0, an older version of SideKick, and The Norton Commander. While you can work on other applications, certain programs will run slightly slower, most notably calculation-intensive spreadsheets and large database operations.

If you do, indeed, need to fax large amounts of material, the Fax Partner's unattended send-and-receive function is a lifesaver. For the home office, where costs are key, you can have the documents automatically sent in the wee hours of the morning when phone rates are lower. But if you need to fax material during normal business hours, a dedicated phone line is a must. Although you can use the phone line normally with the Fax Partner attached, if someone telephones you when it is connected, the fax board may emit a high-pitched tone into the caller's ear that could cause dogs to howl. A customer on the other end of the phone line might not be pleased.—STEVE MILLER

CIRCLE READER SERVICE 101

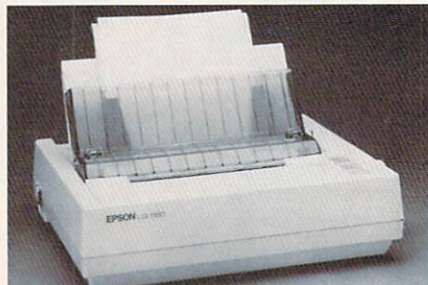
Epson LQ-850 Printer

MANUFACTURER: Epson America, Inc.

ADDRESS: 2780 Lomita Blvd., Torrance, CA 90505; (213) 539-9140

HARDWARE REQUIREMENTS: IBM PC and compatibles; Apple II series with \$130 interface card

PRICE: \$799



The LQ-850 is a 24-pin printer with superior paper handling.

The Epson LQ-850 is among the latest in that company's series of 24-pin letter-quality dot-matrix printers. Epson built its reputation making workhorse dot-matrix printers, and the LQ series continues that tradition. If you decided to design the perfect dot-matrix printer, the LQ-850 would come very close to that ideal.

It's fast (264 characters per second in draft mode, 88 in letter quality), handles both single sheet and continuous feed paper, prints envelopes, comes with both parallel and serial ports, has a built-in pin feed and an 8K (optional 32K) printer buffer, and has multiple fonts standard (Draft, Roman, and Sans Serif with proportional spacing available for Roman and Sans Serif). It also has optional fonts (Courier, Prestige, Script, and OCR-B), which can be added easily with plug-in modules.

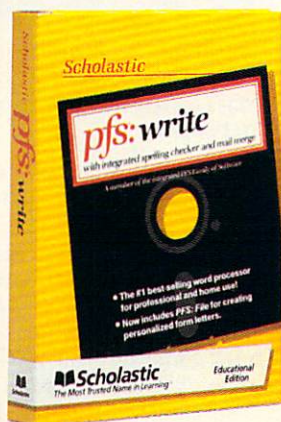
The best thing about the LQ-850 is its superior paper handling. With all of the printers I've owned, I've wasted one sheet of paper every time I started a new print job. If I tried to roll back the paper so the edge of the first sheet lined up with the print-head, the paper always got caught on the paper bar and crumbled. The LQ-850 automatically rolls the page back and keeps the paper bar out of the way until the sheet has advanced the right distance, and then drops it neatly on the paper to keep it taut.

Another of the LQ-850's paper-handling features is its printing of a

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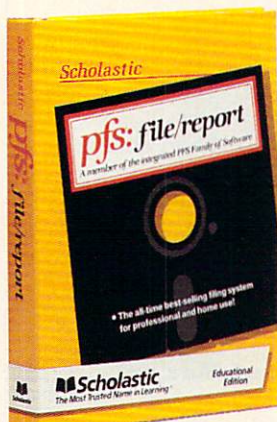
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System Requirements: Apple—128K; MS DOS—256K.

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CIRCLE READER SERVICE 41

PRODUCT REVIEWS

single sheet without the need to remove the continuous-feed paper. This feature is ideal for running the first page of a document on your letterhead using the sheet feeder, and the subsequent pages on blank sheets.

The print quality of the LQ-850 is outstanding. You would be hard pressed to complain about the look of a document generated in the letter-quality mode of the LQ-850. I had friends compare some print samples and asked them to tell me which one was done on a letter-quality printer and which one was done on a dot-matrix printer. Their choices varied, but I had cheated since all the samples had been printed on the LQ-850. It's no idle boast that Epson calls the LQ-850 "letter quality."—STEVE MILLER

CIRCLE READER SERVICE 102

Migent Pocket Modem

MANUFACTURER: Migent, Inc.
ADDRESS: 865 Tahoe Blvd., P.O. Box 6062, Incline Village, NV 89450;
(702) 832-3700, (800) 633-3444
HARDWARE REQUIREMENTS: Any computer with a serial port
PRICE: \$259

Here's a modem that lives up to its name; it will truly fit in your pocket. The Pocket Modem is really small: 5-by-2.5-by-1.3-inches, and it operates at either 300 or 1200 baud.

Intended for people who have to send and receive data while they're traveling, the Hayes-compatible Pocket Modem is battery operated (a standard 9-volt battery is included) and snaps directly into a 25-pin serial port. A 110-volt AC-DC Power Converter is also included.

Hooking up this modem is a snap; just pop it into your computer's serial port and plug in a standard RJ11 telephone connector that comes with the modem. Then you're in business. (Some computers may need a cable. One is supplied for the Macintosh version. Other versions come with a 9-pin to 25-pin DB cable and a 25-pin serial extension cable.)

Communications software comes with each version of the Pocket Modem and is, generally, a rather simple, straightforward package. The one that came bundled with the Macintosh version I used is *Mac-*

Term by Borland International, which is also offered separately by Borland as part of the *SideKick 2.0* series of desk accessories. *MacTerm* works fine for routine chores, but the included manual leaves much to be desired. It could be clearer and more detailed about most aspects of telecommunications, especially computer-to-computer file transfer.

Before you rush out and buy one of these modems, however, you should hear the few downsides to the story. Making a modem this small means that some things might be left out. They are. There's no speaker, so you'll be relying on feedback that shows up on your computer's screen, and there's no power switch or little signal lights to tell you the modem's current operating status.

If you use a portable computer, add a Pocket Modem, and you'll have a portable *communicating* computer. All in all, Migent has done a good job with its Pocket Modem. It's small, convenient, works well, and is rugged enough to travel with you.

—ROGER HART

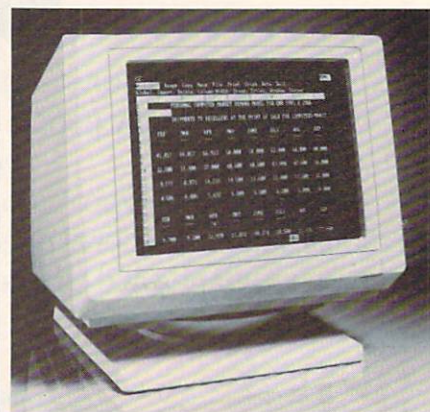
CIRCLE READER SERVICE 103

Amdek Monitor/410

MANUFACTURER: Amdek Corp.
ADDRESS: 1901 Zanker Road, San Jose, CA 95112; (408) 436-8570
HARDWARE REQUIREMENTS: IBM PC or compatible; any display card with a monochrome mode output
PRICE: \$240

The MS-DOS world is increasingly embracing programs that run with a so-called "graphical interface." The term is clumsy, but the trend is undeniable, with formerly text-based applications such as spreadsheets and word processors employing a graphics-based environment.

Most but not all of today's graphics-oriented software works with CGA, a color graphics standard introduced a few years ago. When using CGA, the resolution isn't the greatest, however. This leaves two choices: 1) spend at least \$600 upgrading to a newer and better EGA monitor and graphics card, or 2) spend a couple of hundred dollars for a monochrome monitor and Hercules-compatible graphics card. No question about it, color is nice. But



This monochrome monitor features a 12-inch flat screen.

the Hercules route actually offers higher screen resolution than EGA does.

If a monochrome monitor purchase is in your future, the 410 series from Amdek, a well-known name in the business, deserves serious consideration. The monitor is available with a green, amber, or white screen display. It features a flat, square screen measuring 12 inches diagonally. The screen displays a crisp, clear picture and is covered with nylon mesh, which cuts glare significantly.

Side-mounted controls adjust contrast and brightness. Setting the controls to distinguish between the two levels of white and between the highlighted and the non-highlighted characters requires a certain trial-and-error delicacy. It can be done, though, and the results are worth the effort.

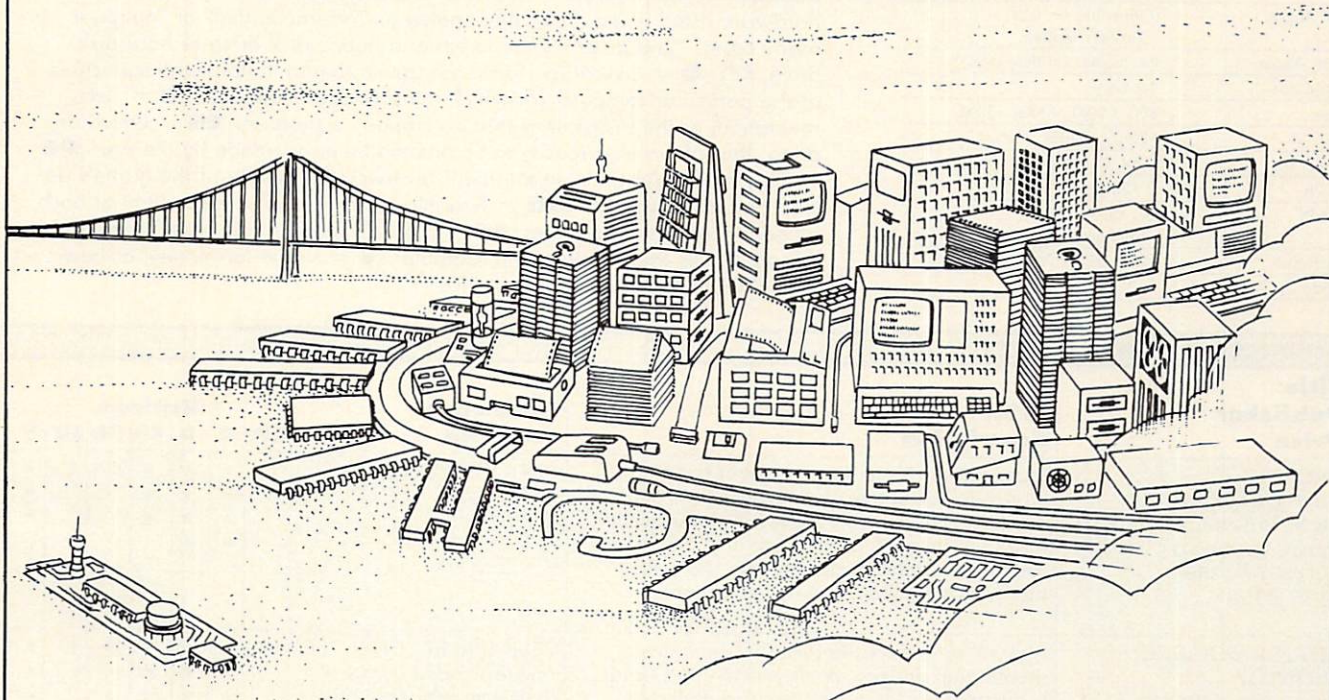
The white-on-black model that I reviewed, the 410W, is perfect for many applications, particularly those featuring black type on a white background. Boot up Microsoft *Excel* or Ventura *Publisher* and you get the eerie sensation that your computer has been transformed into a Macintosh.

While green and amber have become popular for their ease on the eyes, I experienced no discomfort after staring intently at the Amdek white-on-black monitor for many hours. With its combination of sharpness, glare resistance, and white-on-black scheme, the Amdek 410W is a very attractive choice for economy-minded computer owners.

—STEVE MORGENSTERN

CIRCLE READER SERVICE 104

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SOFTWARE GUIDE

Welcome to FAMILY & HOME-OFFICE COMPUTING's Software Guide. The following table relates to the review charts that follow. It lists the various types of computers as designated under "hardware required" (and other hardware designations throughout this issue) and the models included under each designation.

| DESIGNATION | MODELS |
|-------------|--|
| Amiga | 500, 1000, 2000 |
| Apple | II, II Plus, IIe, IIc, IIgs (in IIe/c mode) |
| 64K Apple | II Plus, IIe, IIc, IIgs (in IIe/c mode) |
| 128K Apple | IIe, IIc, IIgs (in IIe/c mode) |
| Apple IIgs | IIgs only |
| Atari | 800, 600XL, 65XE, 130XE |
| Atari ST | 520ST, 1040ST, MegaST |
| C 64/128 | C 64, C 128 (in 64 mode) |
| C 128 | C 128 only |
| IBM PC | PC, XT, AT, PS/2, and compatibles |
| Macintosh | 128K, 512K, Plus, SE, II |
| Tandy CoCo | 2, 3 |

Please note: All Apple designations (except for IIgs) include compatibles such as the Laser 128 or Franklin 2100. Titles listed for the IBM PC will also run on most IBM PC compatibles (as well as the IBM PS/2 series); check with the publisher of the program or your dealer for compatibility. Any additional hardware listed is required unless noted as "recommended" or "optional." In many cases, "2nd drive" refers to either a floppy-disk drive or hard-disk drive. KEY: ● = Overall performance, given the limitations and capacities of the particular computer for which the software is intended. **D** = Documentation, or the instructions that accompany a program. **EH** = Error-handling, the software's capacity to accommodate errors made by the user. **PS** = Play system (in the Entertainment reviews), the quality of the game's design and its playability. **GQ** = Graphics quality, evaluated in light of each model's graphics capabilities. **EU** = Ease of use after the initial learning period; varies from computer to computer. **V** = Value for money, or how the software measures up to its price.

BUSINESS & PRODUCTIVITY

| Title Publisher Price | Brief description | Hardware required | CP | Ratings | | | | | | |
|--|---|--|----|------------------|------------------|------------------|------------------|----|------------------|--|
| | | | | O | D | EH | GQ | EU | V | |
| BACK-IT Gazelle Systems 42 N. University Ave., #10 Provo, UT 84601 (801) 377-1288 \$130 ©1987 | Transforms the tedious chore of backing up data into an almost pleasurable task. With menu-driven control, <i>Back-It</i> automatically numbers floppies (both 5.25- and 3.5-inch), verifies the data, backs up only those files modified since last backup, and more. —ROTTENBERG | 384K IBM PC. Hard-disk drive. | N | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | N/A | E | ★ ★ ★ | |
| BETTER WORKING DESKTOP Spinnaker Software One Kendall Square Cambridge, MA 02139 (617) 494-1200 \$30 ©1987 | A memory-resident helper that includes a memo pad, address book, world clock, and built-in alarm. If you're organized already, it's a decent idea, but it's no quick fix for a lifetime of disorganized habits. Also contains DOS utilities, such as disk formatting. —COLE | 256K IBM PC. 512K recommended. Hard-disk drive optional. | N | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | E | ★ ★ ★ | |
| BETTER WORKING EIGHT-IN-ONE Spinnaker Software (see above for address and phone) \$60 ©1987 | With more modules than most integrated packages, <i>Eight-in-One</i> is an excellent choice for beginners or those with moderate needs. Includes a word processor, spelling checker, database, spreadsheet, outliner, graphics, communications, and utilities.† —ELTGROTH | 384 IBM PC. CGA or EGA (for graphics). | N | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | A | ★ ★ ★ | |
| CHIWRITER Horstmann Software Design Corp. 140 E. San Carlos, #200 San Jose, CA 95112 (408) 298-0828 \$80 ©1987 | By displaying any scientific symbol or mathematical formula on-screen and printing it out with any dot-matrix or laser printer, this specialized, low-cost word processor is a boon to any scientific or technical writer. Control it with either menus or commands. —BEECHHOLD | 256K IBM PC. CGA, EGA, or Hercules. | N | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | A | ★ ★ ★ | |
| DESKTOP EXPRESS Dow Jones & Company, Inc. P.O. Box 300 Princeton, NJ 08543 (609) 520-4000 \$149 ©1987 | Communications software for sending graphics as well as text using MCI Mail. Lets people share the contents of documents even if they don't share the same program that created those documents. Good idea, but it's not that easy to set up. —HALLERMAN | 512K Macintosh. 2nd drive recommended. MCI Mail account. | N | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | A | ★ ★ ★ | |
| MICROSOFT WORKS Microsoft Corporation 16011 N.E. 36th Way Redmond, WA 98073 (206) 882-8080 \$195 ©1987 | Just like with <i>Works</i> on the Mac, Microsoft has come up with a masterpiece of integration. Combines word processor, spreadsheet, database, graphics, and communications so that it's exceptionally easy to share data. Also, screens are similar in each module.† —HUNT | Reviewed on 384K IBM PC. Also for 512K Macintosh. 2nd drive. CGA, EGA, VGA, or Hercules. | N | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | E | ★ ★ ★ ★ | |

RATINGS KEY ● Overall performance; **D** Documentation; **EH** Error-handling; **GQ** Graphics quality; **EU** Ease of use; **V** Value for money; ○ Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; CP Copy protected, yes or no; † Longer review follows chart

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- ☐ **FINANCE 1a,b**—(2 disks) PC Accountant 2.0 personal bookkeeping and finance management.
- ☐ **GAMES 1**—3-D Pacman, Kong, Spacewar, Janit-Joe, futuristic Flightmare and more. Color required.
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- ☐ **GAMES 6**—Pinball, Othello, Dragons, Sopwith (fly a Sopwith Camel) and more. Color required.
- ☐ **INFO 1a,b**—(2 disks) Cooking recipes database with keyword/ingredient retrieval. Add your own.
- ☐ **MUSIC 2a,b**—(2 disks) PianoMan 3.0 polyphonic music recording and playback program.
- ☐ **ORGANIZER 1**—DeskTeam, a Sidekick clone, and the Judy personal calendar program.
- ☐ **PRINTER 1**—Resident print control and font utility, intelligent spooler, banner maker, and more.
- ☐ **SIMULATION 1**—Maze making program, MIT's Life simulation, starfields, etc. Color graphics req.
- ☐ **UTILITIES 1**—A collection of invaluable general purpose DOS utilities. An absolute must for all.
- ☐ **UTILITIES 2**—More invaluable DOS utilities including screen burnout, ram disk, and more.
- ☐ **UTILITIES 3**—A comprehensive set of debugging and diagnostic utilities for monitoring your computer.

NEW RELEASES/UPDATES

- ☐ **BUSINESS 2**—Expressgraph business graphics. Chart your data and find trends. Color graphics req.
- ☐ **CAD 1a,b**—(2 disks) Fingerprint 1.2 advanced painting and Altamira object oriented design. Color.
- ☐ **CAD 2a,b**—(2 disks) DanCad3d, an advanced 2D/3D drafting program w/animation. 640K, color.
- ☐ **COMM 2a,b**—(2 disks) Procomm 2.42, an excellent modem program with terminal emulation.
- ☐ **EDUCATION 3**—PC-Fasttype 1.20 typing tutor, ideal for beginners and advanced students alike.
- ☐ **FINANCES 3a,b**—(2 disks) Express Calc 3.12, a powerful and user friendly spreadsheet program.
- ☐ **GAMES 8**—Striker helicopter attack and Risk, the game of world domination. Color required.
- ☐ **GAMES 12**—Backgammon (play the computer) and Wheel of Fortune based on the gameshow.
- ☐ **GRAPHICS 1**—Record and play back screen images! Excellent for demo, etc. Color required.
- ☐ **GRAPHICS 2a,b,c**—(3 disks) An excellent 3-D surface modelling and shading program. Color.
- ☐ **INFO 2a,b**—(2 disks) Zip-Phone, national areacode/prefix to zip-code cross reference.
- ☐ **LANGUAGE 3a,b**—(2 disks) The A86 3.09 macro assembler and debugger for 8088/86/286s.
- ☐ **SHELL 4a,b**—(2 disks) Automenu and HDM II 4.04 hard disk prog. for custom full-screen menus.
- ☐ **UTILITIES 5**—Hard disk utilities for verifying, formatting, parking and optimizing your disk drives.
- ☐ **UTILITIES 6**—Advanced utilities including Mark/Release (remove resident progs w/o reboot!!)
- ☐ **UTILITIES 7**—More advanced utilities including Masterkey (undeletes files from hard disks).
- ☐ **WORD 1a,b**—(2 disks) PC Write 2.71, a powerful word processing system w/spell checker, laser supt.

Most software listed is shareware or user-supported.

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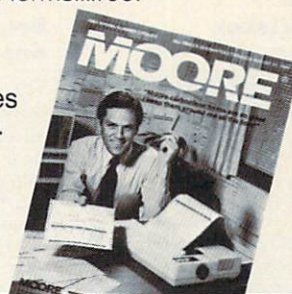
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BUSINESS & PRODUCTIVITY

| Title Publisher Price | Brief description | Hardware required | CP | Ratings | | | | | | |
|---|---|---|----|------------------|------------------|------------------|-----|----|------------------|--|
| | | | | O | D | EH | GQ | EU | V | |
| Q & A WRITE Symantec Corp. 10201 Torre Ave. Cupertino, CA 95014 (408) 253-9600 \$199 ©1987 | This stand-alone word processor is a spin-off from Q & A—the same publisher's integrated database and word processor. The company has enhanced many of the features, including a sophisticated search function and support for PostScript. —SUMMERS | 384K IBM PC. 512K recommended. 2nd drive. | N | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | N/A | E | ★ ★ ★ ★ | |
| THE 64 EMULATOR ReadySoft Inc. P.O. Box 1222 Lewiston, NY 14092 (416) 731-4175 \$40 (\$60 w/cable) ©1987 | Intended to let you attach a C 64 drive to your Amiga and run C 64 software. When a program runs via this method, it works well. Unfortunately, many programs won't load, and those that do work in slow motion. Not worth the bother for most users. —SUMMERS | 512K Amiga. C 64 drive (1541, 1571, or 1581). | Y | ★ ★ | ★ ★ | ★ ★ | N/A | A | ★ | |
| SOFTSWITCH Roger Wagner Publishing, Inc. 1050 Pioneer Way, Suite P El Cajon, CA 92020 (619) 442-0522 \$60 ©1987 | Lets you load up to three programs into memory at once, and then switch among them as needed. Not solely a timesaver, but a means to copy and paste data (including graphics) from one application to another. Convenient, but not recommended for novices. —DONAHUE | 512K Apple IIgs. 1MB recommended. | N | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | N/A | A | ★ ★ ★ | |
| TORNADO Micro Logic Corp. P.O. Box 70 Hackensack, NJ 07602 (201) 342-6518 \$100 (\$150 w/library) ©1987 | Random notes, to-do lists, calendars, memos, and messages are easily managed with this memory-resident utility. Also lets you set up database-like forms, and then search through and print out groups of related notes with lightning speed.† —KLEINHOLZ | 256K IBM PC. CGA, EGA optional. | N | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | N/A | E | ★ ★ ★ ★ | |

EDUCATION & CREATIVITY

| Title Publisher Price | Brief description | Hardware required | CP | Ratings | | | | | | |
|--|--|--|----|------------------|------------------|------------------|------------------|----|------------------|--|
| | | | | O | D | EH | GQ | EU | V | |
| DESIGNASAURUS DesignWare 345 Fourth St. San Francisco, CA 94107 (415) 546-1866 \$40 ©1987 | Three games for dinosaur lovers, such as building imaginary reptiles from various fossil remains. You can print pictures of real dinosaurs, too, but the "Walk-A-Saurus" game failed to impress my family. I suspect there's not long-term fun here. —ELTGROTH | Reviewed on 512K IBM PC. Also for 128K Apple, 512K Apple IIgs, CGA, EGA, or Hercules. Printer recommended. | Y | ★ | ★ | ○ | ★ | A | ★ | |
| DISCOVERY MATH MicroIllusions 17408 Chatsworth St. Granada Hills, CA 91344 (818) 360-3715 \$40 ©1987 | Clean up the valuable crystals in your spaceship while avoiding dangerous alien beings. But you'll need to know arithmetic—including carrying and borrowing numbers—to win. Not enough game and not enough study to be outstanding at either. —SUMMERS | Reviewed on 512K Amiga. Also for 512K Apple IIgs, C 64/128, 256K IBM PC. Joystick. | N | ★ ★ | ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | E | ★ ★ ★ ★ | |
| THE GRAPHICS STUDIO Accolade, Inc. 20813 Stevens Creek Blvd. Cupertino, CA 95014 (408) 446-5757 \$60-\$70 ©1987 | Several paint programs have come out that maximize the IIgs's colorful capabilities. All are good, yet this one introduces another level of excellence that will set the standard. For instance, the zoom mode lets you adjust the magnification.† —FRANK | Reviewed on 768K Apple IIgs. Also for 512K Amiga. Color monitor recommended. | Y | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | ★ ★ ★ | E | ★ ★ ★ ★ | |
| JAM SESSION Broderbund Software 17 Paul Dr. San Rafael, CA 94903 (415) 492-3200 \$50 ©1987 | Whether you're a professional musician or a total amateur, here's a way to improvise (a "jam session") using digitized instrument sounds. Songs range in style from rock to jazz to classical to reggae to bluegrass. A lot of music in a little package.† —LATIMER | 512K Macintosh. 2nd drive, external speaker recommended. | Y | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | E | ★ ★ ★ ★ | |
| WHODUNIT Gessler Educational Software 900 Broadway New York, NY 10003 (212) 673-3113 \$50 ©1987 | Solve the murder of a famous TV personality as you play this graphic adventure in French. The vocabulary is somewhat advanced, but the quality of the program forces less fluent players to expand their abilities. The game is as good as the learning. —ZORNBERG | 512K Macintosh. | N | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | A | ★ ★ ★ ★ | |

RATINGS KEY O Overall performance; D Documentation; EH Error-handling; GQ Graphics quality; EU Ease of use; V Value for money; ○ Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; CP Copy protected, yes or no; † Longer review follows chart

| ENTERTAINMENT | | | | | | | | | | |
|---|---|--|----|------------------|------------------|------------------|------------------|----|------------------|--|
| Title Publisher Price | Brief description | Hardware required | CP | Ratings | | | | | | |
| | | | | O | D | PS | GQ | EU | V | |
| BEYOND ZORK Infocom 125 CambridgePark Dr. Cambridge, MA 02140 (617) 492-6000 \$45-\$50 ©1987 | As the sequel to the first three <i>Zork</i> games, <i>Beyond Zork</i> goes a step further by incorporating role playing. As always, you must solve puzzles and battle monsters in your quest. The object of your search this time is the fabled Coconut of Quendor.† —LANGENDOEN | Reviewed on 128K Apple. Also for 512K Amiga, 512K Atari ST, C 128, 192K IBM PC, 512K Macintosh. | N | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | N/A | E | ★ ★ ★ ★ | |
| DARK LORD Datasoft/IntelliCreations 19808 Nordhoff Place Chatsworth, CA 91311 (818) 886-5922 \$20 ©1985-1987 | Nothing about the plot or graphics of this adventure makes it outstanding, but some original features make it a good choice for beginners. For example, there's a "mini-adventure" tutorial—a small cluster of "rooms" with a few simple puzzles to solve. —LANGENDOEN | Reviewed on 128K Apple. Also for 64K Apple, C 64/128. Joystick optional. | Y | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | E | ★ ★ ★ ★ | |
| DEMON STALKERS Electronic Arts 1820 Gateway Dr. San Mateo, CA 94404 (415) 571-7171 \$30 ©1987 | Armed with simple weapons, players survive a 100-level dungeon. Nothing special in that. What sets it apart is a construction set that lets you preview and alter existing levels or design up to 99 levels of your own. With lively sound effects and fine graphics. —DELSON | C 64/128. Joystick. | Y | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | A | ★ ★ ★ ★ | |
| FORCE 7 Datasoft/IntelliCreations (see above for address and phone) \$20 ©1987 | Playing in a scenario similar to <i>Aliens</i> 's, you're a space marine whose mission is to rescue hundreds of humans held captive on the planet Karis. As a typical arcade shoot-'em-up, the game is the same every time you play it—long on action, short on strategy. —ROSTON | Reviewed on C 64/128. Also for 64K Apple. Joystick. | Y | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | A | ★ ★ ★ ★ | |
| INTO THE EAGLE'S NEST Mindscape, Inc. 3444 Dundee Road Northbrook, IL 60062 (312) 480-7667 \$30-\$40 ©1987 | Battle your way through hordes of Nazi troops in your search for three prisoners and the explosives that will destroy the fortress code-named "Eagle's Nest." Good graphics, digitized sound, and fast-paced action make this simple game best for younger children. —OSGOOD | Reviewed on 512K Atari ST. Also for 512K Amiga, 64K Apple, C 64/128, 256K IBM PC. Color monitor, joystick. | Y | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | E | ★ ★ ★ ★ | |
| THE FAERY TALE ADVENTURE MicroIllusions 17408 Chatsworth St. Granada Hills, CA 91344 (818) 360-3715 \$50 ©1987 | You're off to see the wizard—and regain your village's protective talisman—in an adventure that proves fairy tales are not just for kids. The game has everything: excellent graphics and music, challenging puzzles, and a well-constructed play system.† —SUMMERS | Reviewed on 512K Amiga. Also for 512K Apple IIgs, C 64/128, 256K IBM PC, 512K Macintosh. | Y | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | E | ★ ★ ★ ★ | |
| RAD WARRIOR Epyx, Inc. 600 Galveston Dr. Redwood City, CA 94063 (415) 366-0606 \$20 ©1987 | Starting out naked and armed with rocks, you must save your people by finding an anti-radiation suit and other devices before you can destroy the aliens' nuclear reactor. The animation is too slow, the action too unexciting. I'll pass on this one. —LANGENDOEN | Reviewed on 128K Apple. Also for C 64/128, 128K IBM PC (CGA or EGA). Joystick. | Y | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | E | ★ ★ ★ ★ | |
| WINGS OF FURY Broderbund Software 17 Paul Dr. San Rafael, CA 94903 (415) 492-3200 \$35 ©1987 | This arcade game offers everything I like in the genre. As a World War II pilot, you must clear occupied islands, sink ships, and get into dogfights with enemy planes. Fantastic graphics and multiple skill levels make it attractive for almost every gamer. —LANGENDOEN | 128K Apple. Joystick. Color monitor recommended. | Y | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | E | ★ ★ ★ ★ | |
| XEVIOUS Mindscape, Inc. (see above for address and phone) \$30 ©1987 | As arcade games go, this adaptation of the popular coin-op game is exciting and compelling; it's filled with good sound effects and graphics. But it lacks depth; all but the most devoted arcade fan will probably get bored after only a few hours. —DELSON | Reviewed on 512K Atari ST. Also for 64K Apple, C 64/128. Joystick. | Y | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | ★ ★ ★ ★ | E | ★ ★ ★ ★ | |
| RATINGS KEY O Overall performance; D Documentation; PS Play system; GQ Graphics quality; EU Ease of use; V Value for money; ○ Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; CP Copy protected, yes or no; † Longer review follows chart | | | | | | | | | | |

SOFTWARE REVIEWS

On the following pages, you'll find in-depth reviews of some of the programs listed in the Software Guide. Refer back to the Guide on page 64 for information such as copy protection and addresses of software publishers.

BUSINESS & PRODUCTIVITY

Better Working Eight-in-One

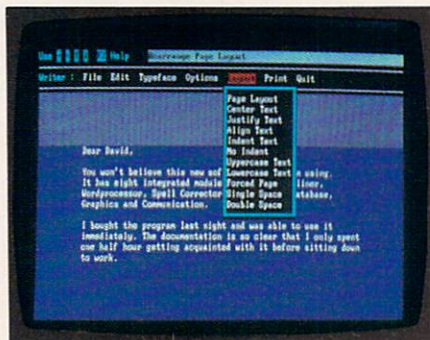
HARDWARE REQUIREMENTS: 384K IBM PC

PUBLISHER: Spinnaker Software
PRICE: \$60

Eight-in-One—part of Spinnaker's *Better Working* series—is the best-integrated package I've ever seen for beginners. The well-organized manual is clearly written, and its lack of an index is offset by a detailed table of contents. The program effectively handled incorrectly entered keystrokes or the wrong disk in the drive during an operation; even novices making many errors failed to crash it.

The eight programs integrated include word processor, spelling checker, database, spreadsheet, outliner, graphics, communications, and desktop utilities (calendar, address book, and memo pad). They truly integrate so that you can write an outline, export it to the word processor, and create a full document and table of contents from the original skeleton. If you want, you can bring in business graphs from the graphics module and calculations from the spreadsheet.

The word processor and spelling checker are adequate for most applications. The word processor can handle a mix of spacing within a document. However, it would be nice to be able to switch from single- to double-spacing by marking only sections of the document (rather than the whole piece). It would also be nice if you could choose more than one option at a time, but the option line disappears after each selection.



The uncluttered mail merge can handle simple merges. Again, it would be nice if it could use data from the address book, not only the database—but what can you expect for \$60? The database is flexible and not too complicated. The spreadsheet is fine for home use, but a small business might need more financial functions.

I successfully logged onto the local bulletin board with the communications mode; however, the package would be more useful if it supported XModem protocol for uploads and downloads. Since the publishers include CompuServe (CIS) information in the package, the CIS "B" protocol would also be helpful.

My major regret was that *Eight-In-One* is only available on a 3.5-inch disk in a separate package (\$70). The smaller format would make it ideal for the IBM PS/2 family or for my NEC laptop. However, you can copy it to the smaller disks yourself if you have both sizes of disk drives.

What more can you ask?

—MARLENE BUMGARNER ELTGROTH

Microsoft Works

HARDWARE REQUIREMENTS: 384K IBM PC, 512K Macintosh

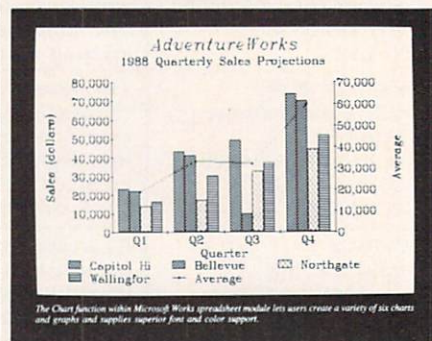
PUBLISHER: Microsoft Corp.
PRICE: \$195

Whenever I hear about a new integrated software package, I always think of the expression "Jack-of-all-trades, master-of-none." As you might expect, when you combine several stand-alone programs, you often lose features of each because there's not enough memory. Micro-

soft Works is no exception. Yet the measure of the quality of an integrated package is the specific features retained in each module. By that light, Works is a masterpiece of integration.

The program includes word processor, spreadsheet, business graphics, database, and communications modules. Each operates well independently, but the quality that makes them special is the ease with which they share data. For example, using the word processor, you can prepare a report that incorporates data from your spreadsheet and also includes a graph that visually emphasizes the spreadsheet's numbers. Then, you can send the whole document on-line using the communications program or prepare a distribution list using the database.

For ease of use, Microsoft has made the screen appear similar in each module. The top line is the main menu. It always includes such options as File, Edit, Print, and Format. The word processor contains a second line—a ruler showing margins and tabs. The bottom of the screen includes a status line that displays the current program parameters and a message line that describes the current command or provides general information.



The word processor offers several features and is easy to learn and use. All functions are available via drop-down submenus, and most are relatively intuitive. Moreover, Works includes safeguards to protect users from errors. For example, if you have changed a document, you cannot



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SOFTWARE REVIEWS

exit without the program asking if you want to save your file. Also worthy of note: you can split the screen to view—and move between—two parts of a document. And in addition to normal printouts, the word processor also prints labels and merges database information into documents. Unfortunately, *Works* failed to include a preview mode; the only way to find out what your document will look like is to print it.

The spreadsheet is also impressive. It includes most of the functions and formatting commands found in stand-alone spreadsheets. Even though it's part of an integrated package, worksheets can be up to 256 columns-by-4,096 rows—half the size of Lotus 1-2-3. You can also import 1-2-3 files; although they're not completely compatible, *Works* will tell you which cells it was unable to interpret and place zeros in those locations.

Chart—a natural partner to the spreadsheet—is a separate menu entry within *Works*. From Chart, you select portions of a worksheet and portray them graphically with line, bar, stacked bar, high-low, area, or pie charts. You can add a title and legend and label the axis.

The database is a flat file, which means it stores information as if it were recorded on a group of index cards. The *Works* database is very flexible. You can easily create and alter the form on which you record your data, placing fields anywhere on the screen. A field will hold a formula, text, or numbers. You can update, store, or report information in several formats. The reports can include formulas (such as adding together two fields—like price and tax—to get a total), some or all of the fields or records, special formats, titles, and more.

The communications module includes telecommunications essentials, such as XModem and ASCII protocols for transferring files. It includes scripts for accessing frequently used services. These scripts are created by recording your keystrokes; you use them to automatically dial the telephone, identify yourself to the service, and supply your password. The program can also capture text, a feature you'll value when that piece of information you were looking for just scrolled off-screen.

To switch among the various modules, you simply open a file. *Works* will allow you to open up to eight files simultaneously, which can be any combination of word-processing, spreadsheet, database, or communications files. Once opened, data may be copied from one file to another with a straightforward procedure.

Works is almost intuitive. Although you could probably learn it without any assistance, Microsoft has provided several aids. The manual is extensive and thoroughly covers each module. The on-line help index is complete, and hitting the first letter of the topic you want to review jumps you to that section of the index. Depending on how you install *Works*, the tutorial may also be available. If you are uncertain how to use a feature, just run the lesson that covers it. Also included are a small reference card, a keyboard guide, an 80-page appendix, a sample idea book, and a "getting to know your computer" booklet.

That last bit of documentation might suggest *Works* is best suited for the novice. This is not true. If you are experienced with computers, but are tired of having to switch between programs, consider *Works*. If you use the basic features of most applications, but not the more esoteric ones (such as automatically creating an index with your word processor), the convenience of having all the programs available at the same time might be justification for changing. If you are a novice, *Works* is easy to learn and helps you quickly begin getting the most from your computer. *Works* for MS-DOS is an easy-to-use, well-balanced, integrated program.

—BROOKS H. HUNT

Tornado

HARDWARE REQUIREMENTS: 256K IBM PC

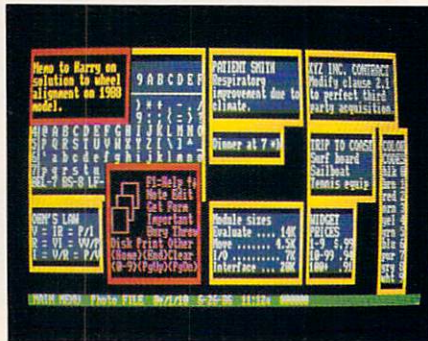
PUBLISHER: Micro Logic Corp.

PRICE: \$100

If your life involves having to juggle a lot of unrelated information, you're going to love this memory-resident program. If your desk or bulletin board is littered with notes (addresses, reference lists, facts to check, books to read, phone messages, changed deadlines), *Tornado* will solve your clutter problem immediately.

When you want to access *Tornado*, you press ALT-J. That lets you move

in and out of your main application to write notes, each of which is kept in a window. Up to nine notes are visible at once, overlapping if necessary. You can adjust note size and shape, limit the number on-screen at one time, and disable the overlap if you like.



You can also create database-like forms, call them up with two keystrokes, and enter any information. And you can perform searches and print out groups of related notes with lightning speed. Because every word in each note is indexed, you don't have to memorize keywords.

Another feature is the ability to take whatever is on your main program's screen and import it into a *Tornado* note. You can also reverse the procedure and put a note into your main program. This can be a real timesaver if you're working with a spreadsheet, part of which you want to edit, keep as a reminder, or even include in a letter written and printed from *Tornado*.

Joining, duplicating, editing, and cutting and pasting within notes is a breeze. It's also quite simple to organize notes and move them in and out of your active *Tornado* file.

The more-expensive Library version, which I reviewed, comes with forms, calendars, and graphic symbol files that are extremely helpful. I recommend that version; it's worth the extra cost (\$50).

My only criticisms: moving text between notes could be less cumbersome (it involves too many steps); and the manual, which has been updated with a special file on disk that you have to print out, could be clearer. The on-screen help, however, is so good, the program so swift and adjustable, that *Tornado*'s usefulness far outweighs these minor inconveniences.

—LISA KLEINHOLZ

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SOFTWARE REVIEWS

EDUCATION & CREATIVITY

The Graphics Studio

HARDWARE REQUIREMENTS: 512K
Amiga, 768K Apple IIGs
PUBLISHER: Accolade Inc.
PRICE: \$60-\$70

Many paint programs have been written for the Apple IIGs. They have all utilized its extensive graphics capabilities and have established a new level of expectation for IIGs graphics. I have used four or five of these programs and found them all quite good. *The Graphics Studio*, however, introduces another level of excellence and capability that will set the standard for IIGs paint programs to come. It is significantly more powerful and versatile, yet easier to use than the other paint programs.

The Graphics Studio has all of the standard art features we have grown accustomed to in paint programs, but in this case each one of these



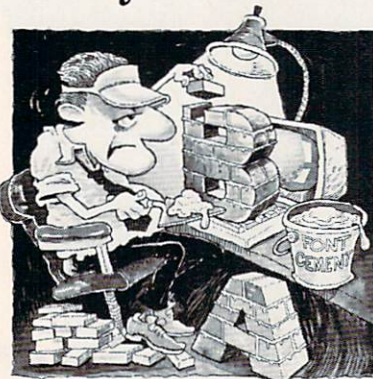
standard features has several variations. It also delivers some desirable new features. Take the straight-line tool for example. You can draw a straight line, connected straight lines, radiating lines (like the rays of a circle), or constrained lines (lines that are either vertical or horizontal). There are tools to draw not only rectangles, but also filled rectangles, concentric rectangles, rounded-edge rectangles, filled rounded-edge rectangles, or rectangles filled with a grid. The size of the grid is adjustable as is the "roundness" of the cor-

ners. The circle and oval drawing tools offer similar choices. Even the fill option has expanded features.

The program comes with 16 basic colors and the ability to choose both background and foreground colors easily. All of the colors can be edited and altered. There is even a feature that allows you to create a range of colors on the palette by selecting any two colors in the palette and having all of the intermediate colors become a blend of the two extremes. Thus, if you wanted to create a palette of 16 shades of gray, you could choose white and black and have the program create all the shades in between with one keystroke.

The features of the other tools are equally extensive. From adjustable magnification to various ways of copying on-screen objects, *The Graphics Studio* gives you more than the competition does. With all these features, you'd think it'd be possible either to be completely overwhelmed or to forget 80 percent of what you had learned after one week. Not so. It is one of the easiest

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programs I have ever used. Also, for the most part, the manual is concise and easy to read. It is a little sparse in places and could use a summary sheet or two. However, any failings the manual might have are minor because the program is so straightforward.

The Graphics Studio truly has established a new standard. I have never before seen a paint program that comes close to the power, versatility, and ease of use of this package.

—CATHY FRANK

Jam Session

HARDWARE REQUIREMENTS: 512K Macintosh

PUBLISHER: Broderbund Software

PRICE: \$50

In the music world, a "jam session" occurs when musicians get together to play music that is improvised and/or unrehearsed. Jamming gives musicians a chance to have fun and stretch out, forgetting laborious sight-reading. *Jam Session* acts as a backup band, giving you the chance



to play screaming solos and melodic phrases on your computer keyboard. The keys are preassigned different instrument sounds and melodic licks so that everything you play sounds pretty much "in the groove."

Jam Session can play up to six very "real" sounding instrument sounds at one time. The instruments sound so good because each was digitally sampled, or recorded, from real instruments. To achieve the best possible sound reproduction, the manual recommends that you hook your Macintosh up to a

stereo, external speaker, headphones, or portable cassette player. Complete instructions, including Radio Shack part numbers, are listed. I connected our Mac to the stereo to test *Jam Session*, and within a minute my three-year-old showed up to find out what new "tape" I was playing.

Jam Session contains 19 song samples, ranging in style from classical to jazz to rock to reggae to bluegrass. You can listen or play along by pressing keys on the keyboard. The keyboard configuration for most songs is set up so that each of the keys on the top row plays single notes. The keys in the second and third rows play preassigned "riffs" of up to several notes, while the keys in the bottom row are usually reserved for various effects and percussion. If you know how to read music and want to create your own riffs, *Jam Session* includes a feature that lets you edit riffs for each key. When you become tired of hearing the same instruments on a song, you can also change the instrument

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SOFTWARE REVIEWS

sounds assigned to the different keys.

Once you have the hang of *Jam Session*, you may want to record a song. You select "Record" from a menu, and everything you play will be recorded. When you have finished recording a song, you have the option of saving it to disk or adding to it by recording again. When you are happy with a recording you can "make a record"—which means your friends can play your "records" on their own Macs without having the *Jam Session* program itself.

Whether you are 3 or 63, a professional musician or total amateur, you can enjoy *Jam Session*. It is designed so well that it sounds good (literally) even when you lean on the keyboard. It's truly unusual to find a program capable of providing so much entertainment for my family.

—JOEY LATIMER

ENTERTAINMENT

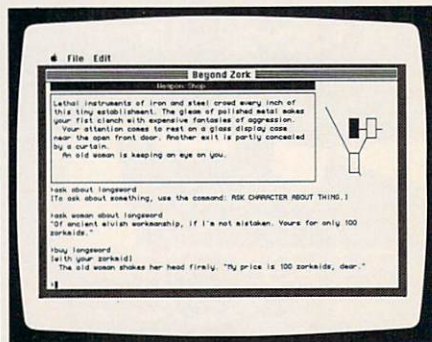
Beyond Zork

HARDWARE REQUIREMENTS: 512K Amiga, 128K Apple, 512K Atari ST, C 128, 192K IBM PC, 512K Macintosh

PUBLISHER: Infocom

PRICE: \$45–\$50

In the beginning there was *Zork*, and it was good. And lo, *Zork II* rose up, and it was good as well. Never



one to rest on its laurels, Infocom gave us *Zork III*, and it was great. But now something wondrous this way comes. Something that transcends its predecessors, something that goes beyond... *Beyond Zork*.

Beyond Zork goes far beyond the ordinary text adventure. With the inclusion of role playing, humor, and many unique options, it forms a

package that is hard to beat.

At the outset, each player creates a character by distributing a set number of "points" among six characteristics: endurance, strength, dexterity, intelligence, compassion, and luck. (Optionally, a pregenerated character can be chosen.) The player's final goal is to save the Southlands of Quendor from the wave of misfortune and evil sweeping over it. There is only one thing that can save the day—the fabled Coconut of Quendor.

On your quest you will encounter rich, detailed, text descriptions and thought-provoking puzzles. However, you will also have to battle monsters, garner treasure, and gain experience as you would in a role-playing game. *Beyond Zork* never quite takes itself seriously, and many humorous interjections are interspersed regularly. The game is easier than the previous *Zorks* in the sense that the problems are generally simpler, but death is still a very real threat, especially considering some of the monsters the player has to confront (dust bunnies, discipline crabs, a cruel puppet, and of course, grues).

Many new commands are available. The most interesting is "Undo," which, if your computer's memory allows, causes the last command you entered to become undone; it's as if you never typed it. Another good feature is that the program automatically maps where you've been and displays it on the screen.

Perhaps it's my imagination, but it seemed that *Beyond Zork's* vocabulary was smaller than that of other Infocom games. On a few occasions I had trouble communicating what I wanted to do, and sometimes had to give up on a particular course of action. But if that is the sacrifice that has to be made to incorporate the role-playing aspect, it's worth it.

Beyond Zork: let there be many more.

—DAVID LANGENDOEN

The Faery Tale Adventure

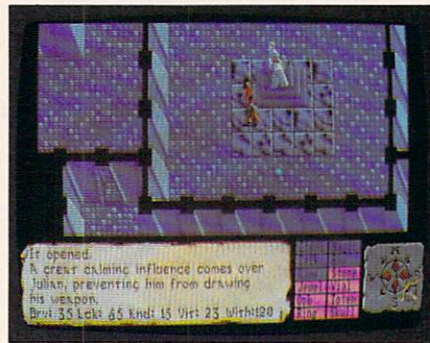
HARDWARE REQUIREMENTS: 512K Amiga, 512K Apple IIGs, C 64/128, 256K IBM PC, 512K Macintosh

PUBLISHER: MicroIllusions

PRICE: \$50

If you think fairy tales are just for kids, this game will change your

mind. Brave Julian and his brothers, the gentle Kevin and clever Philip, are off to seek the wizard one by one in an effort to regain their village's protective talisman. Before you know it, they're being attacked by everything from common thieves to



wraiths and skeletons. Until you locate a sword and learn to fight, no one gets far. A character is rejuvenated each time he's killed until his luck runs out, but after that an even less-experienced younger brother must take up the sword—and that's assuming you were able to find a sword in the first place!

Learning to survive is just the beginning. You can't find the missing talisman unless the King is willing to help, but until you rescue his daughter, he won't know you exist. The princess is locked in an inaccessible tower. You could fly there, but the swan who could help you is on an island, and you can't swim. Get the idea? Fairy tales may be for kids, but *Faery Tale Adventure* has been known to force even hardened adult gamers to their knees—to beg for hints.

The Faery Tale Adventure has just about everything you can ask for in a game. It's attractive—the graphics are better than those you see on a lot of Saturday morning cartoons. Music turns the game into an animated film and warns you when evil creatures are approaching. It's fair—if your character dies, the successor can at least search the remains for any treasures you've collected so far. It's challenging—figuring out what to do with what you've found is almost as tricky as deciding what to do first and where to go next. Best of all, it's fun—and that's the bottom line when it comes to games.

—TAN A. SUMMERS

"Finally, The Right Stuff"

—*NY Times* (Aug. 25, 1987)

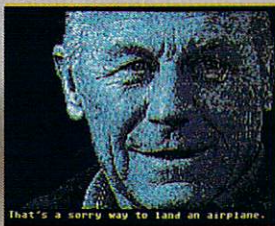
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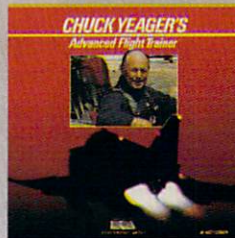
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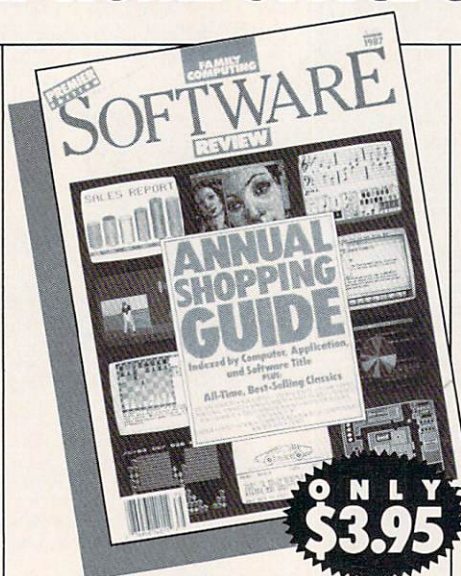
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FYI

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GRAPHICS Page 78

Test your creativity with our *Sketch* drawing program.

HOME-OFFICE DEDUCTION UPDATE Page 86

Here's how to incorporate changes to the tax law into your copy of *Home-Office Deduction Worksheet* from the February 1988 issue.

FUN-AND-GAMES PROGRAM Page 88

This friendly *Numbers Worm* needs your help to stay on his strict diet.

MICROTONES Page 92

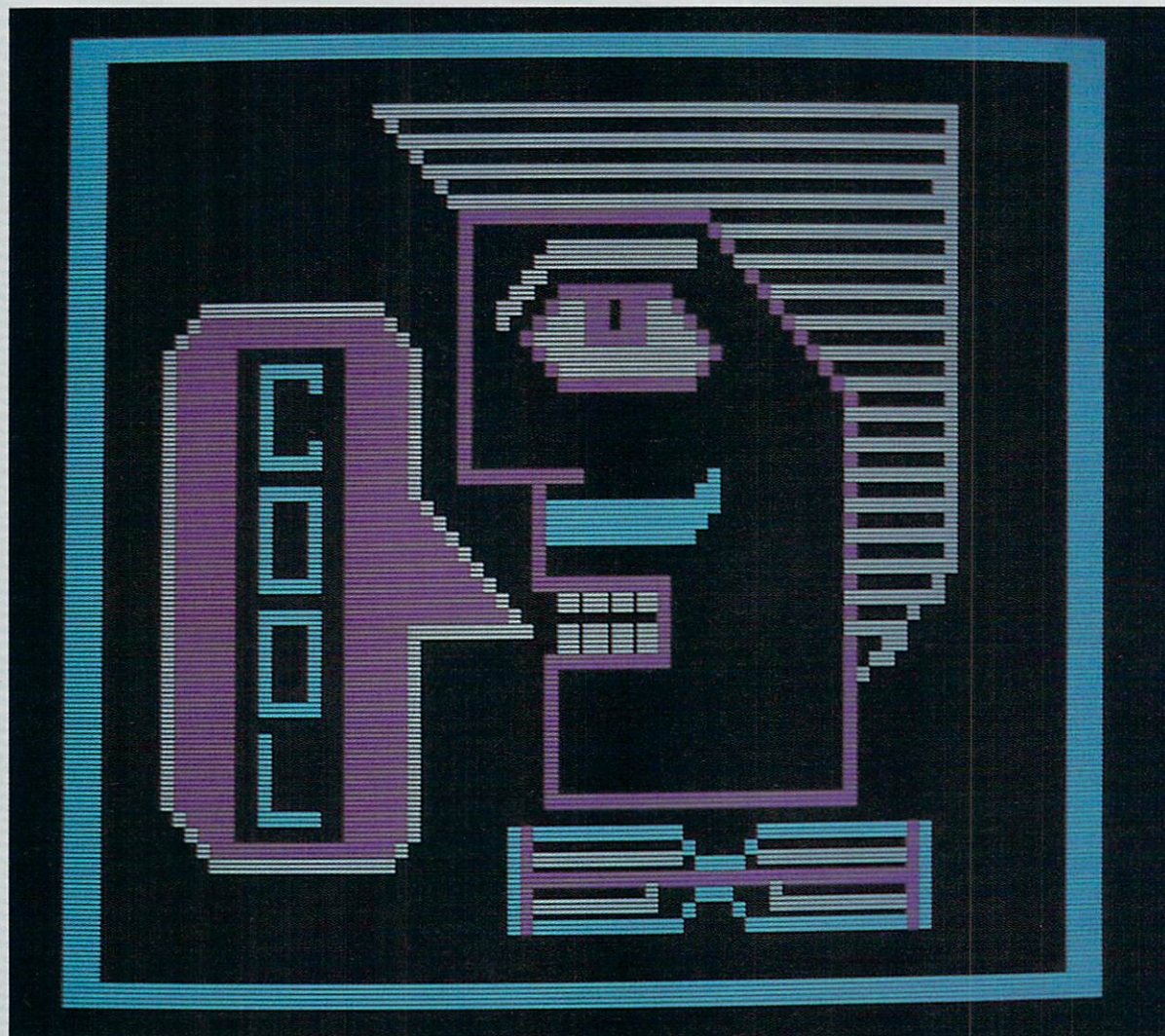
Check out this rambling *Riffraff* of musical notes.

| Computers† | Sketch | Numbers Worm | Riffraff |
|-------------------------------|--------|--------------|----------|
| APPLE FAMILY | | | |
| APPLE II/PLUS/e/e/GS | ★ j | ★ | ★ |
| MACINTOSH | | ★ | ★ |
| COMMODORE 64/128 | | ★ c | ★ |
| IBM PC FAMILY | | | |
| IBM PC | ★ A C | ★ c | ★ |
| IBM PCjr | ★ A c | ★ c | ★ |
| IBM PS/2 Model 30 | ★ A c | ★ c | ★ |
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| BLUE CHIP | | ★ c | ★ |
| COMMODORE PC 10 | ★ C | ★ c | ★ |
| EPSON EQUITY I | ★ C | ★ c | ★ |
| KAYPRO PC-10 | ★ C | ★ c | ★ |
| LEADING EDGE MODEL D | ★ C | ★ c | ★ |
| PANASONIC FX-600 | ★ C | ★ c | ★ |
| TANDY 1000 EX | ★ C | ★ c | ★ |
| VENDEX HEADSTART TURBO 888-XI | ★ C | ★ c | ★ |
| ZENITH Z148PC | ★ C | ★ c | ★ |

KEY: ★ Program in this issue for this computer. † See page 87 for specific models. A Advanced BASIC required. c Color monitor recommended. C Color graphics adapter required. j Joystick recommended.

SKETCH

Create Quick Drawings or Visual Masterpieces with Our Graphics Program



You're sitting around with nothing to do. As your eyes scan the room for something to occupy you, you spot a pencil on the table next to you. You say to yourself, "I know what I can do to keep myself busy for a little while—*sketch!*"

You find a notepad, pick up the pencil, clear your mind, and start to draw. Ten minutes later—"snap!" the pencil point breaks. "Oh well," you think, "just when it was looking good, too! Maybe I'll pick this up again later on." But later on, you can't seem to locate that piece of paper with your masterpiece on it.

Our *Sketch* program saves you from these pitfalls of using paper and pencil. The point of the cursor you use to draw won't break the way a pencil point would. You can also **STORE** your artwork on disk for safe-keeping, but printing may not be possible unless you have screen-dumping capabilities for your computer system.

DRAWING POWER WITHOUT THE PRICE

Our type-in program may not have many of the fancy features that some commercial packages you can buy do, but with a

little patience and ingenuity you should be able to compose screens of equal complexity and colorfulness. *Sketch* offers you numerous drawing possibilities. Above is a sample drawing that was created on the IBM PC using the *Sketch* program.

You can draw some of your own favorite designs and then move to more detailed pictures. Soon, you will be drawing entire scenes with *Sketch*.

You can even draw things other than pictures. Try your hand at fancy lettering or just writing messages on the screen. With *Sketch*, your

creativity is unlimited!

To use *Sketch*, type in the BASIC program for your Apple or IBM PC or compatible computer and **SAVE** it on a disk. Then when you are ready to sketch, **LOAD** the program into your computer and type **RUN**. If you have any problems, refer to "Tips to the Typist" on page 91.

SKETCH FUNCTIONS

With circles, squares, and rectangles drawn by single commands, you can add different figures to your drawings quickly and easily. The program will look and work differently on the Apple and the IBM PC because

SKETCH COMMANDS CHART

| Apple II | B Enter color code | D Hold down button or spacebar to draw | J | K | T Move to point Press button/spacebar | U | C Select radius Press button/spacebar | E Hold button/spacebar to erase | F Select area to fill Press button/spacebar | H |
|---|---------------------------------------|--|--------------|--|---|--|---|--|---|----------|
| Function | Background Color | Draw | Use Joystick | Use Keyboard | Touchup | Undo | Draw Circle or Oval | Erase | Fill Area | Help |
| IBM PC | | | | | | | Cn, where n is radius Oh, v, where h is the height and v is the width | E | Fill where i is inside and b is border color | H |
| L Pick endpoint Press button/spacebar | N Pick new brush Press spacebar | R Select opposite corner Press button/spacebar | Q | S Enter filename Pick Load or Save | Joystick or IOP K ; ; . / | Press 0 to 7 for color | | | | Apple II |
| Draw Lines | Change Brush | Draw Box or Rectangle | Quit | Load and Save | Cursor Movement | Change Color | Move Cursor | Dots per Keystroke | Function | |
| L Select endpoint Press . | +1 to +9 or -1 to -9 | Bn, where n is distance from center to corner Kh, v, where h is the height and v is the width | Q | S | Use numeric keypad | G, R, Y, B for colors P to change palette | M Move cursor Press . to draw again | Dn, where n is the number of dots per keystroke | IBM PC | |

Sketch is written to take advantage of each computer's capabilities. (For a complete list of the program's commands, see the *Sketch Commands Chart*.)

Doodling. Drawing any shape you want is as easy as moving around the screen. In the Apple version, you have the option of using either the keyboard or a joystick to draw. Use the Draw command to let the computer know you want to begin sketching. Refer to the "Sketch Commands Chart" above for the cursor movement keys.

The IBM PC version is a little different, since you can use only keyboard commands. To draw, just move the cursor; but you need to use the Move command if you want to move the cursor to a different location on the screen without drawing. See the chart above for the cursor movement keys.

Change Dot Size. This command will increase or decrease the size of the

dot drawn on the screen. It's just like choosing a different size paintbrush. The Apple has 9 different brushes, while the IBM PC has 9 different brush sizes. On the IBM, for example, a +9 size brush draws something different from what a -9 size will. Try drawing a line and see!

Color. In both versions, you have the option to change the color in which you're drawing. It's like picking up a different color pencil or crayon! The Apple version allows you to change the color of the screen's background. The IBM PC version has a black background, but you can use the Fill command (before drawing anything else) to change its color.

Circle. Each version lets you draw circles quickly and easily with one simple command. The IBM PC version also has an option for drawing ovals.

Box or Rectangle. Boxes of any size are easily drawn with this function. The Apple version has a

command for drawing any size box, including squares and rectangles. The IBM PC version has two separate commands, one for a square box and one for a rectangle.

Lines. Both programs include commands that draw lines of any length and at any angle across the screen.

Fill. Do you want your picture to be a little more colorful? You can fill in any area with color. The Apple will fill a shape from the present cursor location to any border. The IBM PC version will fill the screen with color until it reaches a border of the color you specify.

Erase and Undo. These two commands will take care of unwanted pieces in your drawing, whether you made a mistake or just don't like what you see. In the Apple version, the Erase command will erase only certain parts of your drawing (by letting you draw over them), while Undo will erase the entire last operation. For instance, if you draw a

circle and only want half of it, use the Erase command to erase the part you don't want. If you don't want the circle in your drawing at all, use the Undo command.

In the IBM PC version, the Erase command will erase the entire drawing. To erase a specific portion of your drawing, just draw over the part you don't like or use the Fill command in the same color as the background.

Touch-up. On the Apple, this command draws a single dot which allows you to touch up your drawing.

Save and Load. You'll probably want to save your masterpieces. Both versions of *Sketch* allow you to save your pictures to disk. You can then load them back to either display them or add more to them.

Help. If you happen to forget a command, you can use the Help screen to see a summary of all the commands or use the *Sketch Commands Chart* as a reference.

Apple II series/Sketch

```

10 IF PEEK(104) > 8 THEN 50
20 PRINT CHR$(4); "SAVE FCGRPH.TMP"
30 LOMEM: 26881:POKE 103,1:POKE 104,105:POKE 26880,0
40 PRINT:PRINT CHR$(4); "RUN FCGRPH.TMP"
50 PRINT "PLEASE WAIT 40 SECONDS ..."
60 DIM C$(7),LI(9),SB$(3)
70 FOR I = 0 TO 7:READ C$(I):NEXT I
80 FOR I = 0 TO 3:READ SB$(I):NEXT I
90 FOR I = 24576 TO 25134
100 READ X:IF X < 256 THEN POKE I,X:T = T+X:GOTO 130
110 IF T <> X THEN PRINT "ERROR IN DATA AT LINE ";10*L
N+10000:END
120 T = 0:LN = LN+1:PRINT ".":GOTO 100
130 NEXT I:P = 2*ATN(1):LOC = 25903
140 FOR I = 0 TO 255:S = SIN(I*P/255)*76

```

```

150 C = COS(I*P/255)*128:POKE LOC+I,S:POKE LOC+I+256,C
160 NEXT I:FOR I = 768 TO 858:READ X:POKE I,X:NEXT I
170 POKE 232,0:POKE 233,3:SCALE = 1:ROT = 0
180 X = 70:Y = 80:X0 = X:Y0 = Y:LN = 0:T = 0:UF = 0
190 FG = 3:SN = 1:COPY = 25130
200 CIRCLE = 25037:FILL = 24841:LINE = 24576
210 HGR2:HGR:HCOLOR = FG:HOME
220 FOR I = 1 TO 9:READ L(I):NEXT I:K0 = 1
230 POKE -16304,0
240 HOME:VTAB 21:PRINT "DRAW: ";C$(FG);" ERASE: ";C$(
BG)
250 PRINT "SELECT FUNCTION (PRESS <H> FOR HELP)"
260 FL = 0:XDRAW SN AT X*2,Y:A = 0
270 IF K0 THEN VTAB 18:GET A$:A = ASC(A$):A$ = CHR$(A
-32*(A > 96)*(A < 123))
280 XDRAW SN AT X*2,Y

```


GRAPHICS

```

290 IF KO THEN GOSUB 5050:A = A-64:GOTO 320
300 GOSUB 8000:A = PEEK(-16384)-128:IF A < 0 THEN 260
310 POKE -16368,0:A = A+64:IF A > 63 THEN A = A-128
320 IF A > -17 AND A < -8 THEN FG = A+16:GOTO 240
330 IF A < 1 THEN 260
340 ON A GOTO 260,360,430,550,580,630,260,680,260,1370
,1380,920,260,1280,260,260,1340,1060,1150,1020,1230
350 GOTO 260
360 HOME:VTAB 21:PRINT "CLEAR SCREEN TO WHAT COLOR? "
370 PRINT "<0>BLACK <1>GREEN <2>PURPLE <3>WHITE"
380 PRINT "<4>BLACK2 <5>ORANGE <6>BLUE <7>WHITE2"
390 PRINT "(PRESS RETURN TO ABORT): ";GET A$
400 HOME:IF A$ = "" OR A$ > "7" THEN 240
410 GOSUB 4000:BG = VAL(A$):HCOLOR= BG
420 HPLLOT 0,0:CALL 62454:GOTO 240
430 GOSUB 3000:PRINT "CIRCLE: SELECT CENTER, THEN ";
440 PRINT SB$(KO):GOSUB 2000:IF FL THEN 240
450 GOSUB 3000
460 PRINT "CIRCLE: SELECT RADIUS, ";SB$(1+(KO = 0))
470 POKE 6,X:POKE 7,Y
480 R = SQR((X-X0)^2+(Y-Y0)^2)*2+1
490 IF R > 255 THEN R = 255
500 POKE 8,R:POKE 9,255/R:POKE 10,128
510 CALL CIRCLE:GOSUB 5000:CALL CIRCLE
520 IF PEEK(-16287) > 127 OR (KO AND PEEK(-16384) <> 3
2) THEN 480
530 HCOLOR= FG:POKE 25,L(SN)
540 GOSUB 4000:POKE 10,64:CALL CIRCLE:GOTO 430
550 GOSUB 3000:PRINT "DRAW: TO DRAW ";SB$(KO)
560 GOSUB 2000:IF FL THEN 240
570 GOSUB 7000:GOTO 550
580 NG = FG:FG = BG
590 GOSUB 3000:PRINT "ERASE: ";SB$(KO);" TO ERASE "
600 GOSUB 2000:IF FL THEN FG = NG:GOTO 240
610 NG = FG:FG = BG:GOSUB 7000
620 GOSUB 7000:GOTO 590
630 GOSUB 3000:PRINT "FILL: SELECT AREA, ";
640 PRINT SB$(1+2*(KO = 0)):GOSUB 2000
650 IF FL THEN 240
660 GOSUB 4000:POKE 6,X:POKE 7,Y:POKE 10,1
670 HCOLOR= FG:CALL FILL:GOTO 630
680 TEXT:HOME
690 PRINT " USE I O P TO MOVE AROUND IN"
700 PRINT " K ; KEYBOARD MODE."
710 PRINT " , . /":PRINT "CURSOR POSITION ";X*2;"
";Y
720 PRINT:PRINT TAB(6);"CHANGE FOREGROUND COLOR:"
730 PRINT "<0>BLACK <1>GREEN <2>PURPLE <3>WHITE"
740 PRINT "<4>BLACK2 <5>ORANGE <6>BLUE <7>WHITE2"
750 PRINT "<B>BACKGROUND: CLEAR SCREEN TO NEW COLOR"
760 PRINT "<C>IRCLE: DRAW A CIRCLE"
770 PRINT "<D>RAW: DRAW FREEHAND LINES"
780 PRINT "<E>RASE: DRAW IN BACKGROUND COLOR"
790 PRINT "<F>ILL: FILL IN AN ENCLOSED AREA"
800 PRINT "<H>ELP: LIST ALL COMMANDS"
810 PRINT "<J>OYSTICK: SWITCH TO JOYSTICK MODE"
820 PRINT "<K>EYBOARD: SWITCH TO KEYBOARD MODE"
830 PRINT "<L>INE: DRAW STRAIGHT LINES"
840 PRINT "<N>EW BRUSH: SELECT A NEW BRUSH"
850 PRINT "<Q>UIT: END THE PROGRAM"
860 PRINT "<R>ECTANGLES: DRAW RECTANGLES"
870 PRINT "<S>TORAGE: LOAD AND SAVE PICTURES"
880 PRINT "<T>OUCHUP: DRAW SINGLE POINTS"
890 PRINT "<U>NDO: UNDO LAST ACTION"
900 PRINT "PRESS ANY KEY TO RETURN TO PICTURE";
910 GET A$:GOTO 230
920 GOSUB 3000:PRINT "LINES: SELECT FIRST POINT, ";
930 PRINT SB$(KO):GOSUB 2000:IF FL THEN 240
940 GOSUB 3000
950 PRINT "LINES: ADJUST LINE, THEN ";SB$(KO+2*(KO = 0
))
960 POKE 8,X:POKE 9,Y:POKE 10,128
970 POKE 6,X:POKE 7,Y:CALL LINE
980 POKE 6,X:POKE 7,Y:GOSUB 5000:CALL LINE
990 IF PEEK(-16287) > 127 OR (KO AND PEEK(-16384) <> 3
2) THEN 970

```

```

1000 GOSUB 4000:HCOLOR= FG:POKE 10,64:POKE 25,L(SN)
1010 POKE 6,X:POKE 7,Y:CALL LINE:GOTO 920
1020 GOSUB 3000:PRINT "TOUCHUP: ";SB$(1+2*(KO = 0));
1030 PRINT " TO DRAW A POINT"
1040 GOSUB 2000:IF FL THEN 240
1050 HCOLOR= FG:DRAW 1 AT X*2,Y:GOTO 1040
1060 GOSUB 3000:PRINT "RECTANGLES: SELECT CORNER, ";
1070 PRINT SB$(KO):GOSUB 2000:IF FL THEN 240
1080 GOSUB 3000
1090 PRINT "RECTANGLES: ADJUST BOX, ";SB$(KO)
1100 XX = X:X2 = X:YY = Y:Y2 = Y:POKE 10,128
1110 GOSUB 6000:GOSUB 5000:GOSUB 6000:X2 = X:Y2 = Y
1120 IF PEEK(-16287) > 127 OR (KO AND PEEK(-16384) <>
32) THEN 1110
1130 GOSUB 4000:HCOLOR= FG:POKE 10,64:POKE 25,L(SN)
1140 GOSUB 6000:GOTO 1060
1150 GOSUB 3000:PRINT "PICTURE NAME? (RETURN FOR CATAL
OG) ";INPUT "";NS
1160 IF NS = "" THEN TEXT:HOME:PRINT:PRINT CHR$(4);"CA
TALOG":GOTO 1150
1170 PRINT "<S>AVE, <L>OAD, OR <ESC>: ";GET A$:PRINT
1180 IF A$ = "L" OR A$ = CHR$(108) THEN GOSUB 4000:PRI
NT CHR$(4);"BLOAD";NS;"A$2000":GOTO 230
1190 IF A$ <> "S" AND A$ <> CHR$(115) THEN 230
1200 GOSUB 3000:PRINT "SAVING ";NS
1210 PRINT CHR$(4);"BSAVE";NS;"A$2000,L$2000"
1220 GOTO 230
1230 IF UF = 0 THEN 240
1240 PRINT "UNDO: ATTEMPTING TO UNDO LAST STEP."
1250 POKE 60,0:POKE 61,64:POKE 62,255:POKE 63,95
1260 POKE 66,0:POKE 67,32:CALL COPY:UF = 0:VTAB 23
1270 PRINT "UNDONE. PRESS ANY KEY";GET X$:GOTO 240
1280 GOSUB 3000
1290 PRINT "NEW BRUSH: SELECT ONE OF NINE BRUSHES "
1300 PRINT "BY PRESSING 1-9, THEN PRESS SPACE BAR "
1310 XDRAW SN AT 140,0:GET A$:A = VAL(A$)
1320 XDRAW SN AT 140,0:IF A > 0 THEN SN = A:GOTO 1310
1330 HOME:GOTO 240
1340 GOSUB 3000:PRINT "QUIT: ARE YOU SURE YOU WANT TO
QUIT?";GET Q$
1350 IF Q$ <> "Y" AND Q$ <> CHR$(121) THEN HOME:GOTO 2
40
1360 TEXT:HOME:END
1370 KO = 0:GOTO 240
1380 KO = 1:GOTO 240
2000 VTAB 21:PRINT "PRESS <ESC> TO SELECT A NEW COMMAN
D"
2010 XDRAW SN AT X*2,Y:X0 = X:Y0 = Y:GOSUB 5000
2020 XDRAW SN AT X0*2,Y0
2030 IF PEEK(-16384) = 27 THEN FL = 1:RETURN
2040 IF PEEK(-16287) > 127 OR (KO AND PEEK(-16384) = 3
2) THEN HOME:RETURN
2050 POKE -16368,0:GOTO 2010
3000 HOME:VTAB 22:RETURN
4000 POKE 60,0:POKE 61,32:POKE 62,255:POKE 63,63
4010 POKE 66,0:POKE 67,64:CALL COPY:UF = 1:RETURN
5000 IF KO THEN 5030
5010 GOSUB 8000
5020 RETURN
5030 VTAB 18:GET A$:A = ASC(A$)
5040 A$ = CHR$(A-32*(A > 96)*(A < 123)):VTAB 22
5050 X = X+(A$ = "P")+(A$ = ",")+(A$ = "/" )-(A$ = "I")
-(A$ = "K")-(A$ = " ")
5060 Y = Y+(A$ = " ") + (A$ = ".") + (A$ = "/" )-(A$ = "I")
-(A$ = "O")-(A$ = "P")
5070 X = X+(X < 0)-(X > 139):Y = Y+(Y < 0)-(Y > 159)
5080 RETURN
6000 POKE 6,XX:POKE 7,YY:POKE 8,X2:POKE 9,YY
6010 CALL LINE:POKE 9,Y2:CALL LINE:POKE 8,XX
6020 CALL LINE:POKE 9,YY:CALL LINE:RETURN
7000 GOSUB 4000:GOSUB 3000
7010 PRINT SB$(1+(KO = 0));" TO STOP"
7020 XDRAW SN AT X*2,Y:X0 = X:Y0 = Y
7030 IF KO THEN GOSUB 5030:GOTO 7050
7040 GOSUB 8000
7050 XDRAW SN AT X0*2,Y0:HCOLOR= FG:DRAW SN AT X0*2,Y0

```



```

7060 IF PEEK(-16287) > 127 OR (K0 AND PEEK(-16384) <>
32) THEN 7020
7070 RETURN
8000 X = X+(PDL(0) > 210)-(PDL(0) < 45)
8010 X = X+(X < 0)-(X > 139)
8020 Y = Y+(PDL(1) > 210)-(PDL(1) < 45)
8030 Y = Y+(Y < 0)-(Y > 159):RETURN
9000 DATA BLACK, GREEN, PURPLE, WHITE
9010 DATA BLACK2, ORANGE, BLUE, WHITE2
9020 DATA HOLD BUTTON, PRESS SPACE, RELEASE BUTTON
9030 DATA PRESS BUTTON
10000 DATA 165,8,160,1,56,229,6,176,6,73,255,1135
10010 DATA 105,1,160,255,133,62,133,11,132,64,1056
10020 DATA 165,9,160,1,56,229,7,176,6,73,255,1137
10030 DATA 105,1,160,255,133,63,133,12,132,65,1059
10040 DATA 169,0,133,66,133,67,165,66,24,101,924
10050 DATA 62,133,66,144,16,166,6,164,7,32,124,920
10060 DATA 96,165,6,24,101,64,133,6,198,11,165,969
10070 DATA 67,24,101,63,133,67,144,16,166,6,787
10080 DATA 164,7,32,124,96,165,7,24,101,65,133,918
10090 DATA 7,198,12,165,11,208,202,165,12,208,1188
10100 DATA 198,166,6,164,7,32,124,96,96,224,1113
10110 DATA 140,144,1,96,192,160,144,1,96,32,1006
10120 DATA 179,96,32,149,96,36,10,112,10,165,885
10130 DATA 226,166,224,164,225,232,32,149,96,1514
10140 DATA 164,61,166,60,96,32,17,244,165,28,1033
10150 DATA 36,10,112,11,48,2,81,38,37,48,81,504
10160 DATA 38,145,38,96,165,25,133,26,169,0,835
10170 DATA 32,5,246,96,132,61,134,60,138,160,1064
10180 DATA 0,10,144,1,200,170,165,61,96,32,179,1058
10190 DATA 96,32,17,244,169,0,133,9,165,48,9,962
10200 DATA 38,41,127,240,4,230,9,6,9,165,226,1095
10210 DATA 166,224,164,225,232,32,17,244,165,1469
10220 DATA 48,49,38,41,127,240,2,230,9,166,60,1010
10230 DATA 164,61,165,9,96,132,61,72,152,164,1076
10240 DATA 66,153,47,100,138,153,47,99,104,153,1060
10250 DATA 47,98,230,66,164,61,96,166,6,164,1098
10260 DATA 7,32,194,96,133,8,170,189,246,246,1321
10270 DATA 69,228,41,127,240,236,166,6,169,0,1282
10280 DATA 133,63,133,64,133,66,169,1,32,243,1037
10290 DATA 96,169,255,32,243,96,198,66,164,66,1385
10300 DATA 185,47,99,133,62,185,47,98,201,1,1058
10310 DATA 240,6,169,1,133,64,208,2,133,63,185,1204
10320 DATA 47,100,168,169,0,133,65,166,62,32,942
10330 DATA 104,97,169,1,133,65,166,62,32,104,933
10340 DATA 97,165,66,240,5,198,66,76,50,97,96,1156
10350 DATA 32,124,96,192,159,240,9,200,32,194,1278
10360 DATA 96,136,197,8,240,6,169,1,133,63,208,1257
10370 DATA 15,165,63,240,11,200,169,1,32,243,1139
10380 DATA 96,169,0,133,63,136,192,0,240,9,136,1174
10390 DATA 32,194,96,200,197,8,240,6,169,1,133,1276
10400 DATA 64,208,15,165,64,240,11,136,169,255,1327
10410 DATA 32,243,96,169,0,133,64,200,165,65,1167
10420 DATA 240,12,232,224,140,208,12,169,0,133,1370
10430 DATA 63,133,64,96,202,224,255,240,244,1521
10440 DATA 32,194,96,197,8,208,237,240,155,162,1529
10450 DATA 0,134,66,189,47,101,32,20,98,133,820
10460 DATA 67,189,47,102,32,20,98,133,65,24,777
10470 DATA 101,7,168,165,6,24,101,67,170,32,841
10480 DATA 114,96,165,6,56,229,67,170,32,114,1049
10490 DATA 96,165,7,56,229,65,168,32,114,96,1028
10500 DATA 165,6,24,101,67,170,32,114,96,165,940
10510 DATA 66,24,101,9,133,66,170,144,190,96,999
10520 DATA 133,11,160,8,169,0,133,12,70,11,144,851
10530 DATA 3,24,101,8,106,102,12,136,208,243,943
10540 DATA 96,160,0,76,44,254
11000 DATA 9,0,20,0,22,0,25,0,32,0,39,0,45,0,57,0,67,0
11010 DATA 80,0,109,0,53,39,0,45,53,62,63,44,45,0,73
11020 DATA 41,159,146,26,47,0,173,146,173,146,61,0,53
11030 DATA 55,53,55,53,55,53,55,53,55,53,0,45,45,45,45
11040 DATA 45,45,45,45,61,0,63,175,63,175,63,175,63
11050 DATA 175,63,175,63,175,0,173,173,189,59,23,231
11060 DATA 231,111,40,7,0,20,22,25,32,39,45,57,67,80

```

—APPLE VERSION BY
PETER COCKCROFT

IBM PC & compatibles/Sketch

```

10 KEY OFF:DEF SEG=&H40:KBS=PEEK(&H17)
20 POKE &H17,(KBS OR &H60):DEF SEG
30 DIM C(2),DT$(9),HUS$(3,1),LD$(6),LUX$(6),PL$(1)
40 DIM RD$(6),RU$(6),SK$(2009)
50 H=1:D=1:DD$="":P=0:S=1
60 FOR Z=0 TO 1:READ PL$(Z):NEXT Z
70 HUS$(0,0)="Black":HUS$(0,1)="Black"
80 FOR Z=1 TO 3:READ HUS$(Z,0),HUS$(Z,1):NEXT Z
90 FOR Z=1 TO 9:READ DT$(Z):NEXT Z:SCREEN 1
100 PSET(10,10):DRAW "E4NL2D2":GET (10,6)-(14,10),RU$
110 PSET(20,20):DRAW "H4NR2D2":GET (16,16)-(20,20),LUX
120 PSET(30,30):DRAW "F4NL2U2":GET (30,30)-(34,34),RD$
130 PSET(40,40):DRAW "G4NR2U2":GET (36,40)-(40,44),LD$
140 SCREEN 0:WIDTH 80:LOCATE 5,36:PRINT STRING$(10,42)
150 PRINT TAB(36);"* SKETCH *"
160 PRINT TAB(36);STRING$(10,42):LOCATE 12,30
170 PRINT "A Graphic Arts Program":LOCATE 14,23
180 PRINT "from FAMILY & HOME-OFFICE COMPUTING"
190 LOCATE 20,28:INPUT "Press <ENTER> to begin.",K$:CL
S
200 PRINT "Which drive do you want to save your drawin
gs on";
210 INPUT DR$:DR$=LEFT$(DR$,1)
220 IF DR$="A" AND DR$<="C" THEN 240
230 BEEP:PRINT "Enter A, B, or C for drive.":GOTO 210
240 CLS:PRINT "Select one of the following drawings or
enter the name of a new drawing."
250 PRINT "Don't type in the .PIC extension.":PRINT
260 ON ERROR GOTO 1310:FILES DR$+"*.PIC":PRINT
270 INPUT F$:F$=DR$+"":LEFT$(F$,8)+"*.PIC"
280 OPEN F$ AS #1 LEN=8:FIELD #1,8 AS SK$
290 GET #1,1:PD=CVD(SK$):ON ERROR GOTO 0
300 IF NOT PD THEN X=159:Y=99:M=0:SD=0:GOTO 410
310 SD=1:PRINT "Here comes your drawing ..."
320 GET #1,2:X=CVD(SK$):GET #1,3
330 Y=CVD(SK$):GET #1,4:H=CVD(SK$)
340 GET #1,5:P=CVD(SK$):GET #1,6
350 S=CVD(SK$):GET #1,7:D=CVD(SK$)
360 GET #1,8:M=CVD(SK$):GET #1,9
370 X2=CVD(SK$):GET #1,10:Y2=CVD(SK$)
380 IF D<0 THEN DD$="":D=ABS(D) ELSE DD$="+"
390 FOR Z=0 TO 2000:GET #1,Z+11
400 SK$(Z)=CVD(SK$):NEXT Z
410 CLS:GOSUB 2000:A=0:PD=1
420 IF DD$="-" THEN LN=1 ELSE LN=D
430 K$=INKEY$:IF K$<>"" THEN 510
440 IF A THEN 430
450 FOR Z=1 TO 2
460 IF X<159 AND Y>99 THEN PUT (X+1,Y-5),LD$:GOTO 500
470 IF X>159 AND Y<=99 THEN PUT (X-5,Y+1),RU$:GOTO 500
480 IF X>159 AND Y>99 THEN PUT (X-5,Y-5),RD$:GOTO 500
490 IF X<159 AND Y<=99 THEN PUT (X+1,Y+1),LUX
500 FOR W=1 TO 100:NEXT W:NEXT Z:GOTO 430
510 IF K$<"1" OR K$>"9" THEN 580
520 FOR Z=1 TO S:X1=X:Y1=Y:K=VAL(K$)
530 X=X+LN*((K MOD 3=1)-(K MOD 3=0))
540 Y=Y+LN*((K>6)-(K<4))
550 IF X<0 OR X>319 OR Y<0 OR Y>199 THEN X=X1:Y=Y1
560 IF M=0 THEN PSET(X,Y),H:DRAW DT$(D)
570 NEXT Z:GOTO 430
580 IF K$<>"" AND K$<>"" THEN 630
590 DD$=K$
600 K$=INKEY$:IF K$="" THEN 600
610 IF K$>"1" AND K$<="9" THEN D=VAL(K$):GOTO 420
620 BEEP:GOTO 430
630 IF K$="A" THEN A=NOT A:GOTO 430
640 NH=INSTR("BGRY",K$)-1:IF NH>-1 THEN H=NH:GOTO 430
650 IF K$="H" THEN GET (0,0)-(319,199),SK$:GOSUB 2000:
GOTO 430
660 IF K$="L" THEN M=2:X2=X:Y2=Y:GOTO 430
670 IF K$="M" THEN M=1:GOTO 430
680 IF K$="P" THEN P=(P+1) MOD 2:COLOR 0,P:GOTO 430
690 ON INSTR("DCXKOFSEQN",K$) GOTO 710,740,740,740,84
0,840,980,1030,1150,1160,1170

```


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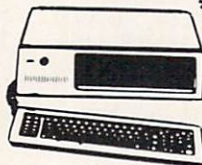
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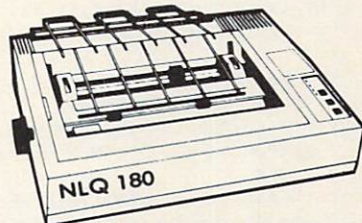
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GRAPHICS

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700 BEEP:GOTO 430
710 IF M=1 THEN PSET(X,Y),H:M=0:GOTO 430
720 IF M=2 THEN LINE(X2,Y2)-(X,Y),H:M=0:GOTO 430
730 BEEP:GOTO 430
740 X$="":K=INSTR("DCX",K$)-1
750 K$=INKEY$:IF K$="" THEN 750
760 IF K$="." THEN 800
770 IF K$<"0" OR K$>"9" THEN BEEP:GOTO 430
780 X$=X$+K$
790 IF VAL(X$)>120 THEN BEEP:GOTO 430 ELSE 750
800 IF VAL(X$)<1 THEN BEEP:GOTO 430
810 IF K=0 THEN S=VAL(X$):GOTO 430 ELSE CX=VAL(X$)
820 IF K=1 THEN CIRCLE (X,Y),CX,H:GOTO 430
830 LINE (X-CX,Y-CX)-(X+CX,Y+CX),H,B:GOTO 430
840 FP=-1:K=INSTR("KO",K$)
850 X$=""
860 K$=INKEY$:IF K$="" THEN 860
870 IF FP AND K$="," THEN 930
880 IF NOT FP AND K$="." THEN 930
890 IF K$<"0" OR K$>"9" THEN BEEP:GOTO 430
900 X$=X$+K$
910 IF FP AND VAL(X$)>160 THEN BEEP:GOTO 430
920 IF NOT FP AND VAL(X$)>120 THEN BEEP:GOTO 430 ELSE 860
930 IF VAL(X$)<1 THEN BEEP:GOTO 430
940 IF FP THEN FP=0:X1=VAL(X$):GOTO 850 ELSE Y1=VAL(X$)
950 IF K=1 THEN LINE(X-X1,Y-Y1)-(X+X1,Y+Y1),H,B:GOTO 430
960 IF X1>Y1 THEN CX=X1 ELSE CX=Y1
970 CIRCLE (X,Y),CX,H,,Y1/X1:GOTO 430
980 FP=0:FOR Z=1 TO 2
990 K$=INKEY$:IF K$="" THEN 990
1000 C(Z)=INSTR("BGRY",K$)-1:IF C(Z)<0 THEN FP=-1:Z=2
1010 NEXT Z:IF FP THEN BEEP:GOTO 430
1020 PRESET(X,Y):PAINT(X,Y),C(1),C(2):GOTO 430
1030 GET (0,0)-(319,199),SK#:SCREEN 0:WIDTH 80
1040 PRINT "Your drawing is being saved. Please stand by."
1050 LSET SK$=MKD$(-1):PUT #1,1:LSET SK$=MKD$(X)
1060 PUT #1,2:LSET SK$=MKD$(Y):PUT #1,3
1070 LSET SK$=MKD$(H):PUT #1,4:LSET SK$=MKD$(P)
1080 PUT #1,5:LSET SK$=MKD$(S):PUT #1,6
1090 IF DD$="" THEN LSET SK$=MKD$(-D) ELSE LSET SK$=MKD$(D)
1100 PUT #1,7:LSET SK$=MKD$(M):PUT #1,8
1110 LSET SK$=MKD$(X2):PUT #1,9:LSET SK$=MKD$(Y2)
1120 PUT #1,10:FOR Z=0 TO 2000:LSET SK$=MKD$(SK$(Z))
1130 PUT #1,Z+11:NEXT Z:SD=1:SCREEN 1,0:COLOR 0,P
1140 PUT (0,0),SK#:GOTO 430
1150 IS="erase your drawing":GOTO 1180
1160 IS="quit":GOTO 1180
1170 IS="leave the current drawing"
1180 GET (0,0)-(319,199),SK#:SCREEN 0:WIDTH 80
1190 PRINT "Are you sure you want to ";IS;"? ";
1200 PS=INKEY$:IF PS<"Y" AND PS<"N" THEN 1200
1210 PRINT PS
1220 IF PS="N" THEN SCREEN 1,0:COLOR 0,P:PUT (0,0),SK#:GOTO 430
1230 IF K$<"Q" THEN 1260
1240 CLOSE:IF SD<>1 THEN KILL FS
1250 DEF SEG=&H40:POKE &H17,KBS:DEF SEG:KEY ON:END
1260 IF K$<"N" THEN 1290
1270 CLOSE:IF SD<>1 THEN KILL FS
1280 GOTO 240
1290 SCREEN 1,0:COLOR 0,P:X=159:Y=99:M=0
1300 PSET (X,Y),H:GOTO 430
1310 BEEP:RESUME 270
2000 SCREEN 0:WIDTH 80
2010 PRINT TAB(28);"SKETCH PROGRAM HELP SCREEN"
2020 PRINT "The numeric keypad controls direction."
2030 PRINT "Your current position in ";FS;" is";X;"across,";Y;"down."
2040 PRINT STRING$(52,196);CHR$(194);STRING$(26,196)
2050 FOR Z=5 TO 22:LOCATE Z,53:PRINT CHR$(179):NEXT Z
2060 PRINT STRING$(52,196);CHR$(193);STRING$(26,196)

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2070 LOCATE 5,1:PRINT "DOTS PER"
2080 PRINT "KEYSTROKE: Dn. (n=1 to 120); current DPK is";S
2090 LOCATE 8,2:PRINT "DOT SIZE: +1 thru +9, -1 thru -9; current DS is ";DD$;RIGHT$(STR$(D),1)
2100 LOCATE 10,5:PRINT "COLOR: G=";HUS$(1,P);", R=";HUS$(2,P);", Y=";HUS$(3,P);",
2110 LOCATE 11,12:PRINT "B=Black, P=change Palette;"
2120 PRINT TAB(12);"current color is ";HUS$(H,P);",
2130 LOCATE 13,12:PRINT "current palette is ";PL$(P)
2140 LOCATE 15,4:PRINT "CIRCLE: Cn. (n=1 to 120)"
2150 LOCATE 16,7:PRINT "BOX: Xn. (n=1 to 120)"
2160 LOCATE 17,6:PRINT "OVAL: Oh,v. (h=1 to 160, v=1 to 120)"
2170 LOCATE 18,1:PRINT "RECTANGLE: Kh,v. (h=1 to 160, v=1 to 120)"
2180 LOCATE 20,6:PRINT "MOVE: Ma. (a=arrow keys)"
2190 LOCATE 21,6:PRINT "LINE: La. (a=arrow keys)"
2200 IF M<>0 THEN LOCATE 19+M,33:PRINT "; currently active"
2210 LOCATE 22,6:PRINT "FILL: Fib (i=inside color, b=border color)"
2220 LOCATE 6,56:PRINT "H=display HELP screen"
2230 LOCATE 9,56:PRINT "A=ARROW on/off switch;"
2240 LOCATE 10,60:PRINT "currently ";
2250 IF A THEN PRINT "OFF" ELSE PRINT "ON"
2260 LOCATE 12,56:PRINT "S=SAVE drawing to disk"
2270 LOCATE 15,56:PRINT "E=ERASE screen"
2280 LOCATE 18,56:PRINT "N=get NEXT drawing"
2290 LOCATE 21,56:PRINT "Q=QUIT program"
2300 LOCATE 24,25:INPUT "Press <ENTER> to continue.",K$
2310 SCREEN 1,0:COLOR 0,P
2320 IF PD THEN PUT (0,0),SK# ELSE PSET(X,Y),H
2330 RETURN
3000 DATA "Green/Red/Yellow","Aqua/Pink/White"
3010 DATA Green,Aqua,Red,Pink,Yellow,White
4000 DATA "R0","R1D1L1U1","R1D1L2U2R2G1"
4010 DATA "D2L1U3R3D3L1U2L1","D2L2U4R4D4L1U3L2D2E1"
4020 DATA "D3R1U4L2D4L1U5R5D5L1U5G2"
4030 DATA "D1L1U2R2D3L3U4R4D5L5U6R6D6H3"
4040 DATA "D4L1U5R2D5R1U6L4D6L1U7R7D7L1U7G3"
4050 DATA "D1L1U2R2D3L3U4R4D5L5U6R6D7L7U8R8D8H4"

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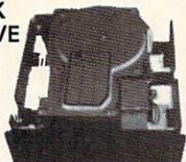
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HOME-OFFICE DEDUCTION UPDATE

As the March issue was going to press, the Internal Revenue Service (IRS) published a revision to *Publication 587 (Business Use of Your Home)*. The revision includes a worksheet for computing the home-office deduction. This worksheet differs from the one printed by our *Home-Office Deduction Worksheet* program and spreadsheet template in the February issue in two ways.

The first is the definition of gross income. We defined gross income as your total business income less all ordinary and necessary expenses not directly related to the office space, such as advertising, salaries, and supplies. On the IRS worksheet, you insert your total business income on the gross income line and then deduct such expenses as part of the primary deductions. This produces a worksheet that looks different but produces the same result.

The second difference relates only to taxpayers whose business portion of mortgage interest and real estate taxes combined exceeds their gross income. Under the old regulations, a taxpayer could never deduct more than his or her gross income in a given year. Under more liberal new regulations recently published by the IRS, the limit on the deductions is either the gross income or the business portion of mortgage interest and real-estate taxes—whichever is greater.

Listed below are some changes to our program that reflect the IRS's new, more generous approach. These changes affect only those taxpayers whose gross income is less than the business percentage of their mortgage interest and real-estate taxes. For all others, the program as published does calculate the correct allowable deduction and carryover amounts.

Changes to the spreadsheet version.

Change the text in cell B27 to read as follows:

Cell B27 1. Gross Income (less business expenses)

Change the formulas in the following cells:

Cell F58 D29-E29

Cell F59 D30-E30

Cell F61 If cell E29 plus cell E30 is greater than cell F27 then cell E29 plus cell E30 else the sum of cells H29 to H50 minus cell H46

Apple II series

Change lines 560 and 780 to read as follows:

560 TA(4) = DA(2,1)-DA(2,2):TA(5) = DA(3,1)-DA(3,2)

780 PRINT:PRINT P\$(3):US\$="1. "+D\$(1)+" (LESS BUSINESS EXPENSES)"

Also, add line 585:

585 IF DA(2,2)+DA(3,2) > TA(6) THEN TA(6) = DA(2,2)+DA(3,2)

Commodore 64/128 (C 64 mode)

Change lines 570 and 790 to read as follows:

570 TA(4)=DA(2,1)-DA(2,2):TA(5)=DA(3,1)-DA(3,2)

790 PRINT#4,P\$(3):US\$="1. "+D\$(1)+" (LESS BUSINESS EXPENSES)":T=DA(1,1)

Also, add line 595:

595 IF DA(2,2)+DA(3,2)>TA(6) THEN TA(6)=DA(2,2)+DA(3,2)

IBM PC & compatibles and Macintosh

Change lines 520 and 770 to read as follows:

520 TA(4)=DA(2,1)-DA(2,2):TA(5)=DA(3,1)-DA(3,2)

770 LPRINT P\$(3):US\$="1. "+D\$(1)+" (less business expenses)"

Also, add line 545:

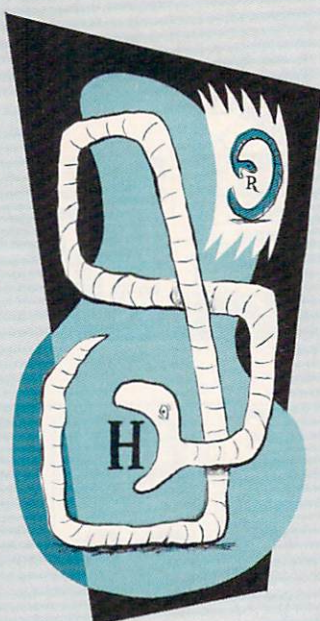
545 IF DA(2,2)+DA(3,2)>TA(6) THEN TA(6)=DA(2,2)+DA(3,2)

NUMBERS WORM

BY JOEY LATIMER

The Numbers Worm is a worm with a few unique twists. Instead of living in the lawn, it lives in your computer. But don't fret. This worm is friendly and eats only what you tell it to. But, your worm needs to stay on a special diet. It can only eat numbers and must stay away from all letters. It's up to you to control the worm's direction by using special keys—"I" (up), "K" (down), "J" (left), and "L" (right)—so that your worm will eat the numbers on the screen, in order, and stick to its diet! Depending on how hungry the Numbers Worm is, you can choose the speed at which it moves, from 1 (fastest) to 7 (slowest).

After eating all the numbers on the screen, the Numbers Worm will move to another level. As levels increase, so does the number of points you score. The more levels the Numbers Worm munches



through, the more difficult the levels become. So, watch out for the letters and don't let the worm run into itself, its trail, or the border. Your worm will then have a great meal, it will stick to its diet, and you will gain points! Good luck and bon appetit!

Apple II series/Numbers Worm

```
10 DIM NC(4),NR(4),XP(6),YP(6):NORMAL:TEXT:HOME
20 HS = 0:PS = ".":FOR X = 2 TO 38:PS = PS+ ".":NEXT X
30 FOR X = 0 TO 4:READ NC(X),NR(X):NEXT X
40 FOR X = 768 TO 796:READ ML:POKE X,ML:NEXT X
50 GOSUB 1000:VTAB 5:HTAB 1
60 PRINT "SET THE SPEED FACTOR BY ENTERING A"
70 PRINT "NUMBER BETWEEN 1 (FASTEST) AND 7"
80 PRINT "(SLOWEST)."
90 GOSUB 2000:SP = VAL(K$)-1
100 IF SP < 0 OR SP > 6 THEN PRINT CHR$(7):GOTO 90
110 PRINT
120 PRINT "THESE KEYS CONTROL THE WORM'S MOVEMENT:"
130 GOSUB 4000:PRINT:PRINT
140 PRINT:PRINT "PRESS <S> TO START,"
150 PRINT TAB(7);"<C> TO CHANGE SPEED FACTOR, OR"
160 PRINT TAB(7);"<Q> TO QUIT."
170 GOSUB 2000:IF K$ = "S" THEN 210
180 IF K$ = "C" THEN HOME:GOTO 50
190 IF K$ = "Q" THEN HOME:END
200 GOTO 170
210 LVL = 1:SC = 0
220 POKE -16368,0
230 HOME:N = 1:HP = 1
240 TT = LVL+2:IF TT > 7 THEN TT = 7
250 FOR X = 1 TO 6:XP(X) = 9-X:YP(X) = 16:NEXT X
260 PRINT TAB(2);PS
270 FOR X = 1 TO 16:PRINT TAB(2);".":
280 INVERSE:PRINT SPC(36);:NORMAL:PRINT ".":
290 NEXT X:PRINT TAB(2);PS
300 INVERSE:FOR X = 1 TO INT(RND(1)*3)+9
310 VTAB INT(RND(1)*12)+4:HTAB INT(RND(1)*32)+5
```

```
320 PRINT CHR$(INT(RND(1)*26)+65)
330 NEXT X:FOR X = 1 TO TT
340 A = INT(RND(1)*12)+4:B = INT(RND(1)*30)+6
350 CH = SCRN(B-1,2*(A-1))+16*SCRN(B-1,2*(A-1)+1)
360 IF CH <> 32 THEN 340
370 VTAB A:HTAB B:PRINT CHR$(48+X):NEXT X:NORMAL
380 VTAB 16:HTAB 3:PRINT "*****"
390 VTAB 19:HTAB 7:PRINT "SCORE: ";SC
400 VTAB 19:HTAB 25:PRINT "LEVEL: ";LVL:GOSUB 4000
410 DX = 1:DY = 0
420 FOR DE = 0 TO SP*6:NEXT DE
430 K = PEEK(-16384):IF K < 128 THEN 460
440 POKE -16368,0:IF K < 201 OR K > 204 THEN 460
450 DK = K-200:DX = NC(DK):DY = NR(DK)
460 TX = XP(HP)+DX:TY = YP(HP)+DY
470 FOR DE = 0 TO SP*5:NEXT DE
480 CH = SCRN(TX-1,2*(TY-1))+16*SCRN(TX-1,2*(TY-1)+1)
490 IF CH = 32 THEN 550
500 IF CH-48 <> N THEN 590
510 N = N+1:T = 50:GOSUB 3000
520 SC = SC+(CH-48)*3*(7-SP)
530 VTAB 19:HTAB 14:PRINT SC
540 IF N = TT+1 THEN LVL = LVL+1:GOTO 220
550 HP = HP-1:IF HP < 1 THEN HP = 6
560 VTAB YP(HP):HTAB XP(HP):PRINT CHR$(32)
570 XP(HP) = TX:YP(HP) = TY
580 VTAB TY:HTAB TX:PRINT "*":GOTO 420
590 FOR X = 1 TO 30
600 VTAB TY:HTAB TX:PRINT CHR$(INT(RND(1)*3)+42)
610 T = INT(RND(1)*100)+50:GOSUB 3000
620 NEXT X:GOSUB 1000
630 VTAB 4:HTAB 1:PRINT "TOUGH LUCK! YOU RAN INTO ";
640 IF CH = 42 THEN PRINT "YOURSELF.":GOTO 660
650 PRINT "SOMETHING."
660 PRINT:PRINT "YOUR SCORE WAS ";SC;".":
670 IF SC > HS THEN HS = SC
680 PRINT "THE HIGH SCORE IS ";HS;".":
690 PRINT:PRINT "PRESS <S> TO START AGAIN.":GOTO 150
1000 HOME:VTAB 2:HTAB 9
1010 PRINT "THE NUMBERS WORM--":RETURN
2000 K = PEEK(-16384)-128:IF K < 0 THEN 2000
2010 POKE -16368,0:K$ = CHR$(K-(K > 96)*(K < 123)*32)
2020 RETURN
3000 POKE 8,T:POKE 6,2:CALL 768:RETURN
4000 PRINT:PRINT TAB(3);"<J>=LEFT <L>=RIGHT <I>=UP <K>=DOWN"
4010 PRINT:PRINT "EAT ALL NUMBERS IN ORDER. DON'T RUN INTO";
4020 PRINT "LETTERS, YOUR TRAIL, OR THE BORDER.";
4030 RETURN
5000 DATA 0,0,0,-1,-1,0,0,1,1,0
6000 DATA 165,8,74,133,10,164,8,173,48,192,136,234
6010 DATA 234,208,251,165,7,56,229,10,133,7,176,237
6020 DATA 198,6,208,233,96
```

Commodore 64 & 128 (C 64 mode)/Numbers Worm

```
10 DIM BC(7),NC(4),NR(4),XP(6),YP(6)
20 DN=51164:MV=49700:OV=51163:SB=1024:S=54272:HS=0
30 CL$=CHR$(147):GR$=CHR$(30):LR$=CHR$(150)
40 PS$="..":SP$=CHR$(18):FOR X=1 TO 36:PS$=PS$+ "."
50 SP$=SP$+CHR$(32):NEXT X:SP$=SP$+CHR$(146)
60 FOR X=S TO S+23:POKE X,0:NEXT X
70 POKE S+24,15:POKE S+5,66:POKE S+6,66
80 PRINT CL$:POKE 53280,11:POKE 53281,11
90 FOR X=0 TO 4:READ NC(X),NR(X):NEXT X
100 FOR X=49700 TO 49710:READ ML:POKE X,ML:NEXT X
110 FOR X=1 TO 7:READ BC(X):NEXT X
120 GOSUB 1000:POKE DN,5:POKE OV,0:SYS MV
130 PRINT GR$;"SET THE SPEED FACTOR BY ENTERING A"
140 PRINT "NUMBER BETWEEN 1 (FASTEST) AND 7"
150 PRINT "(SLOWEST)."
160 GOSUB 2000:SP=VAL(K$)-1:IF SP<0 OR SP>6 THEN 160
170 PRINT:PRINT CHR$(159);"THESE KEYS CONTROL THE WORM'S MOVEMENT:"
```


FUN-AND-GAMES PROGRAM

```

180 GOSUB 3000:PRINT:PRINT
190 PRINT:PRINT GR$;"PRESS <S> TO START,"
200 PRINT TAB(6);"<C> TO CHANGE SPEED FACTOR, OR"
210 PRINT TAB(6);"<Q> TO QUIT."
220 GOSUB 2000:IF K$="S" THEN 260
230 IF K$="C" THEN PRINT CL$:GOTO 120
240 IF K$="Q" THEN 220
250 PRINT CL$:CHR$(154):POKE 53281,6:POKE 53280,14:END
260 LVL=1:K0=1:SC=0
270 GET K$:IF K$="" THEN 270
280 PRINT CL$:NO=1:HP=1
290 TT=LVL+2:IF TT>7 THEN TT=7
300 FOR X=1 TO 6:XP(X)=8-X:YP(X)=16:NEXT X
310 PRINT TAB(1);CHR$(BC(K0));PS:FOR X=1 TO 16
320 PRINT TAB(1);".";SP$;".":NEXT X:PRINT TAB(1);PS
330 FOR X=1 TO INT(RND(1)*3)+9
340 POKE DN,INT(RND(1)*12)+4:POKE OV,INT(RND(1)*32)+5
350 SYS MV:PRINT CHR$(18);LRS:CHR$(INT(RND(1)*26)+65)
360 NEXT X:PRINT CHR$(5);:FOR X=1 TO TT
370 A=INT(RND(1)*12)+4:B=INT(RND(1)*30)+6
380 IF PEEK(SB+A+40*B)<160 THEN 370
390 POKE DN,A:POKE OV,B:SYS MV
400 PRINT CHR$(18);CHR$(48+X):NEXT X:POKE DN,16
410 POKE OV,2:SYS MV:PRINT CHR$(158);"*****"
420 POKE DN,19:POKE OV,7:SYS MV
430 PRINT LRS;"SCORE:";SC:POKE DN,19:POKE OV,25:SYS MV
440 PRINT CHR$(158);"LEVEL:";LVL:GOSUB 3000
450 DX=1:DY=0
460 FOR DE=0 TO SP*11:NEXT DE
470 GET K$:IF K$="" OR K$="I" OR K$="L" THEN 490
480 DK=ASC(K$)-72:DX=NC(DK):DY=NR(DK)
490 TX=XP(HP)+DX:TY=YP(HP)+DY
500 FOR DE=0 TO SP*14:NEXT DE
510 CH=PEEK(SB+TX+40*TY):IF CH=160 THEN 580
520 IF CH-176<>NO THEN 630
530 NO=NO+1:POKE S+4,129:POKE S+1,47:POKE S,107
540 FOR DE=1 TO 15:NEXT DE:POKE S+4,128
550 SC=SC+(CH-176)*3*(7-SP):POKE DN,19:POKE OV,13
560 SYS MV:PRINT LRS:SC:IF NO<>TT+1 THEN 580
570 LVL=LVL+1:K0=K0+1:K0=K0+(K0=8)*7:GOTO 270
580 HP=HP-1:HP=HP-(HP=0)*6:POKE DN,YP(HP)
590 POKE OV,XP(HP):SYS MV:PRINT CHR$(32)
600 XP(HP)=TX:YP(HP)=TY
610 POKE DN,TY:POKE OV,TX:SYS MV
620 PRINT CHR$(158);"*":GOTO 460
630 FOR X=1 TO 10:POKE S+4,33
640 POKE DN,TY:POKE OV,TX:SYS MV
650 PRINT CHR$(148+INT(RND(1)*6)+1);"*":POKE S+1,9
660 POKE S,INT(RND(1)*100)+50:FOR DE=1 TO 25
670 NEXT DE,X:POKE S+4,32:GOSUB 1000:POKE 214,3:PRINT
680 PRINT CHR$(158);"TOUGH LUCK! YOU RAN INTO ";
690 IF CH=42 THEN PRINT "YOURSELF.":GOTO 710
700 PRINT "SOMETHING."
710 PRINT:PRINT "YOUR SCORE WAS";STR$(SC);"."
720 IF SC>HS THEN HS=SC
730 PRINT "THE HIGH SCORE IS";STR$(HS);"."
740 PRINT GR$;"PRESS <S> TO START AGAIN,":GOTO 200
1000 K0=10:PRINT CL$:POKE DN,2:POKE OV,8:SYS MV
1010 PRINT CHR$(5);"*--THE NUMBERS WORM--*":RETURN
2000 GET K$:ON -(K$="") GOTO 2000:RETURN
3000 PRINT:PRINT GR$:TAB(2);"<J>=LEFT <L>=RIGHT <I>=UP
<K>=DOWN"
3010 PRINT:PRINT CHR$(159);"EAT ALL NUMBERS IN ORDER.
DON'T RUN INTO";
3020 PRINT "LETTERS, YOUR TRAIL, OR THE BORDER.";
3030 RETURN
4000 DATA 0,0,0,-1,-1,0,0,1,1,0
4010 DATA 174,220,199,172,219,199,24,32,240,255,96
5000 DATA 31,144,150,153,154,156,159

```

IBM PC & compatibles/Numbers Worm

```

10 DEF SEG=&H40
20 IF (PEEK(&H10) AND 48)=32 THEN WIDTH 40
30 DEF SEG:DIM NC(4),NR(4),XP(6),YP(6)

```

```

40 KEY OFF:COLOR ,0:SCREEN 0,0:RANDOMIZE TIMER
50 FOR X=0 TO 4:READ NC(X),NR(X):NEXT X:HS=0
60 GOSUB 1000:COLOR 2:LOCATE 5,1
70 PRINT "Set the speed factor by entering a"
80 PRINT "number between 1 (fastest) and 7"
90 PRINT "(slowest).":
100 GOSUB 2000:SP=VAL(K$)-1
110 IF SP<0 OR SP>6 THEN BEEP:GOTO 100
120 COLOR 3:PRINT TAB(3);"These keys control the worm's
movement:"
130 GOSUB 3000:PRINT:PRINT
140 COLOR 2:PRINT:PRINT "Press <S> to start,"
150 PRINT TAB(7);"<C> to change speed factor, or"
160 PRINT TAB(7);"<Q> to quit."
170 GOSUB 2000:IF K$="S" THEN 200
180 IF K$="C" THEN CL$:GOTO 60
190 IF K$="Q" THEN COLOR 7:CLS:KEY ON:END ELSE 170
200 LVL=1:K0=1:WC=10:SC=0
210 K$=INKEY$:IF K$="" THEN 210
220 CL$:NO=1:HP=1
230 TOT=LVL+2:IF TOT>7 THEN TOT=7
240 FOR X=1 TO 6:XP(X)=9-X:YP(X)=16:NEXT X
250 COLOR K0:PRINT TAB(2);STRINGS$(38,46)
260 FOR X=1 TO 16:PRINT TAB(2);".";STRINGS$(36,219);"."
270 NEXT X:PRINT TAB(2);STRINGS$(38,46)
280 COLOR 12,K0:FOR X=1 TO INT(RND*3)+9
290 LOCATE INT(RND*12)+4,INT(RND*32)+5
300 PRINT CHR$(INT(RND*26)+65)
310 NEXT X:COLOR 15,K0:FOR X=1 TO TOT
320 A=INT(RND*12)+4:B=INT(RND*30)+6
330 IF SCREEN(A,B)<>219 THEN 320
340 LOCATE A,B:PRINT CHR$(48+X):NEXT X
350 COLOR WC,0:LOCATE 16,3:PRINT STRINGS$(6,42)
360 COLOR 12:LOCATE 19,7:PRINT "Score:";SC:COLOR 14
370 LOCATE 19,25:PRINT "Level:";LVL:GOSUB 3000
380 DX=1:DY=0:MC=0
390 FOR DE=0 TO SP*30+20:NEXT DE
400 K$=INKEY$:IF K$="" THEN 430
410 GOSUB 2010:DK=INSTR("IJKL",K$):IF DK=0 THEN 430
420 DX=NC(DK):DY=NR(DK)
430 TX=XP(HP)+DX:TY=YP(HP)+DY
440 FOR DE=0 TO SP*20:NEXT DE
450 CH=SCREEN(TY,TX):IF CH=219 THEN 510
460 IF CH-48<>NO THEN 570
470 NO=NO+1:SOUND 200,.5:SOUND 300,.5
480 SC=SC+(CH-48)*3*(7-SP)
490 COLOR 12:LOCATE 19,13:PRINT SC
500 IF NO=TOT+1 THEN K0=K0 MOD 7+1:LVL=LVL+1:GOTO 210
510 HP=(HP+4) MOD 6+1
520 LOCATE YP(HP),XP(HP):PRINT CHR$(32)
530 XP(HP)=TX:YP(HP)=TY:MC=MC+1:IF MC<16 THEN 560
540 MC=0:WC=WC+1-(WC=7)
550 WC=WC-(WC=K0):IF WC=16 THEN WC=1-(K0=1)
560 COLOR WC:LOCATE TY,TX:PRINT "*"
570 FOR X=1 TO 30:COLOR INT(RND*15)+1
580 LOCATE TY,TX:PRINT "*"
590 NEXT X:GOSUB 1000:COLOR 14
600 LOCATE 4,1:PRINT "Tough luck! You ran into ";
610 IF CH=42 THEN PRINT "yourself." ELSE PRINT "someth
ing."
620 PRINT:PRINT "Your score was";STR$(SC);"."
630 IF SC>HS THEN HS=SC
640 PRINT "The high score is";STR$(HS);"."
650 PRINT:PRINT "Press <S> to start again,":GOTO 150
1000 K0=10:CLS:LOCATE 2,10,0:FOR X=1 TO 22:COLOR K0
1010 PRINT MID$("*--THE NUMBERS WORM--*",X,1);
1020 K0=K0+1:K0=K0+(K0>15)*6:NEXT X:RETURN
2000 K$=INKEY$:IF K$="" THEN 2000
2010 K=ASC(K$):K$=CHR$(K-(K>96)*(K<123)*32):RETURN
3000 PRINT:COLOR 2
3010 PRINT TAB(3);"<J>=left <L>=right <I>=up <K>=down"
3020 PRINT:COLOR 3
3030 PRINT "Eat all numbers IN ORDER. Don't run into";
3040 PRINT "letters, your trail, or the border.";
3050 RETURN
4000 DATA 0,0,0,-1,-1,0,0,1,1,0

```


Macintosh/Numbers Worm

```

10 DEFINT A-Z: DIM BD(38,18), NC(4), NR(4), XP(6), YP(6)
20 RANDOMIZE TIMER: CALL TEXTFONT(4): CALL TEXTSIZE (9)
30 CALL TEXTMODE(0): CALL HIDECURSOR: WIDTH 85
40 WINDOW 1, "X--NUMBERS WORM--*", (0,38)-(527,338): HS=0
50 BK$=CHR$(250): FOR X=0 TO 4: READ NC(X), NR(X): NEXT X
60 CLS: LOCATE 5,1
70 PRINT TAB(23); "Set the speed factor by entering a"
80 PRINT TAB(23); "number between 1 (fastest) and 7"
90 PRINT TAB(23); "(slowest).": PRINT
100 GOSUB 1000: SP=VAL(K$)-1
110 IF SP<0 OR SP>6 THEN BEEP: GOTO 100
120 PRINT TAB(23); "These keys control the worm's movem"
130 GOSUB 2000: PRINT: PRINT
140 PRINT: PRINT TAB(23); "Press <S> to start,"
150 PRINT TAB(29); "<C> to change speed factor, or"
160 PRINT TAB(29); "<Q> to quit."
170 GOSUB 1000: IF K$="S" THEN 200
180 IF K$="C" THEN CLS: GOTO 60
190 IF K$="Q" THEN CLS: END ELSE 170
200 LVL=1: SC=0
210 FOR X=1 TO 38: BD(X,1)=250: BD(X,18)=250
220 NEXT X: FOR Y=2 TO 17: FOR X=2 TO 37: BD(X,Y)=0
230 NEXT X: BD(1,Y)=250: BD(38,Y)=250: NEXT Y
240 CLS: NO=1: HP=1
250 TOT=LVL+2: IF TOT>7 THEN TOT=7
260 FOR L=1 TO 6: XP(L)=8-L: YP(L)=16: BD(XP(L),15)=42
270 NEXT L: PRINT TAB(23); STRING$(38,BK$): FOR X=1 TO 16
280 PRINT TAB(23); BK$: SPC(36): BK$: NEXT X
290 PRINT TAB(23); STRING$(38,BK$): CALL TEXTMODE(2)
300 FOR L=1 TO INT(RND*3)+9
310 X=INT(RND*31)+4: Y=INT(RND*11)+5
320 IF BD(X,Y)<>0 THEN 310
330 T=INT(RND*26)+65: BD(X,Y)=T
340 LOCATE Y,X+22: PRINT CHR$(T): NEXT L: FOR L=1 TO TOT
350 X=INT(RND*31)+4: Y=INT(RND*11)+5
360 IF BD(X,Y)<>0 THEN 350
370 BD(X,Y)=48+L
380 LOCATE Y,X+22: PRINT CHR$(48+L)
390 NEXT L: LOCATE 16,24: PRINT STRING$(6,42)
400 LOCATE 19,27: PRINT "Score:"; SC
410 LOCATE 19,45: PRINT "Level:"; LVL: GOSUB 2000
420 DX=1: DY=0
430 FOR DE=0 TO SP*90+30: NEXT DE
440 K$=INKEY$: IF K$="" THEN 470
450 GOSUB 1010: DK=INSTR("IJKL",K$)
460 IF DK>0 THEN DX=NC(DK): DY=NR(DK)
470 TX=XP(HP)+DX: TY=YP(HP)+DY
480 FOR DE=0 TO SP*80+30: NEXT DE
490 CH=BD(TX,TY): IF CH=0 THEN 560
500 IF CH=48<>NO THEN 610
510 LOCATE TY,TX+22: PRINT CHR$(CH)
520 NO=NO+1: SOUND 200,1: SOUND 300,1
530 SC=SC+(CH-48)*3*(7-SP): CALL TEXTMODE(0)
540 LOCATE 19,33: PRINT SC: CALL TEXTMODE(2)
550 IF NO=TOT+1 THEN LVL=LVL+1: GOTO 210
560 HP=(HP+4) MOD 6+1: BD(XP(HP),YP(HP))=46
570 LOCATE YP(HP),XP(HP)+22: PRINT "*"
580 LOCATE YP(HP),XP(HP)+22: PRINT "."
590 BD(TX,TY)=42: XP(HP)=TX: YP(HP)=TY
600 LOCATE TY,TX+22: PRINT "*": GOTO 430
610 LOCATE TY,TX+22: PRINT CHR$(CH)
620 FOR X=1 TO 30: LOCATE TY,TX+22: PRINT "*"
630 SOUND INT(RND*100)+100,1: NEXT X: CALL TEXTMODE(0)
640 CLS: LOCATE 4,1
650 PRINT TAB(23); "Tough Luck! You ran into ";
660 IF CH=42 THEN PRINT "yourself." ELSE PRINT "someth"
670 PRINT: PRINT TAB(23); "Your score was"; STR$(SC); "."
680 IF SC>HS THEN HS=SC
690 PRINT TAB(23); "The high score is"; STR$(HS); "."
700 PRINT
710 PRINT TAB(23); "Press <S> to start again,": GOTO 150
1000 K$=INKEY$: IF K$="" THEN 1000
1010 K=ASC(K$): K$=CHR$(K-(K>96)*(K<123)*32): RETURN

```

```

2000 PRINT: PRINT TAB(25); "<J>=left <L>=right <I>=up <K>=down"
2010 PRINT: PRINT TAB(23); "Eat all the numbers IN ORDER"
2020 PRINT TAB(23); "Don't run"
2020 PRINT TAB(23); "into letters, your trail, or the b"
2020 PRINT TAB(23); "order.": RETURN
3000 DATA 0,0,0,-1,-1,0,0,1,1,0

```

FYI

(212) 505-3703

A HELP LINE FOR PROGRAM PROBLEMS

Call our Program Status Line any time of the day or night to receive an up-to-date summary of our latest programs, the machines on which they run, and any corrections or enhancements to the programs.

PROGRAMMING P.S.

Correction to a Previous Month's Program

Home-Office Deduction Worksheet (February 1988, page 74)

IBM PC and compatibles: If you're wondering what those funny-looking symbols are in lines 590, 600, 620, and 630 (§)—they are supposed to be backslashes (\). Our printer is unable to generate this symbol.

COVERAGE NEWS

As of the April 1988 issue of FAMILY & HOME-OFFICE COMPUTING, we are no longer publishing BASIC programs for the Atari 800 XL/XE and Tandy Color Computer.

GO WITH THE FLOW

Interactive EasyFlow (HavenTree Software Ltd., P.O. Box 1093, Thousand Island Park, NY 13692) is a flowcharting program that helps you design procedural, organizational, and system charts. It's ideal for programmers, administrators, or anyone else who requires a graphic representation of a program, organization, or system. *Interactive EasyFlow* is easy to use and produces very professional-looking charts that can be printed. It costs \$150 for 384K IBM PC and compatibles with Hercules, color, or enhanced graphics capabilities.

TOOLBOXES FOR APPLE II PROGRAMMERS

If you own an Apple II series computer and you feel limited by the Applesoft programming language, then the *TOOLBOX* series of programs from Roger Wagner Publishing (1050 Pioneer Way, Suite P, El Cajon, CA 92020; [619] 442-0522) might be for you. The *VIDEO TOOLBOX*, the *DATABASE TOOLBOX*, the *CHART 'N' GRAPH TOOLBOX*, and the *WIZARD'S TOOLBOX* each add a few dozen new commands to Applesoft BASIC. By using the toolboxes, you can explore mouse control, sound generation, data handling, graphics, screen dumps, and much, much more! The programs cost \$39.95 apiece.

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INTRODUCTION TO GEOS

The book *GEOS INSIDE AND OUT* is an introduction to the Graphics Environment Operating System (GEOS) for the Commodore 64/128. It breaks down some GEOS applications, and the GEOS itself, into illustrated detail. In addition, the reader is given a chapter full of GEOS tricks and tips, a look "inside GEOS," and a GEOS memory layout. *GEOS INSIDE AND OUT* (\$19.95) is published by Abacus, 5370 52nd St., S.E., Grand Rapids, MI 49508 ([616] 241-5510).

TIPS TO THE TYPIST

Typing BASIC programs from FAMILY & HOME-OFFICE COMPUTING is a great way to learn about programming and get some free software to boot! But it's frustrating to type in a long program, only to find it doesn't work as it should. If you're new to typing in programs, here are some tips to help make your first experiences rewarding ones.

BEFORE TYPING IN A PROGRAM

1. Check to see if it will run on your computer under a version of BASIC you have available. Also check to see if special hardware—a disk drive, joysticks, or a printer, for example—is required. Unless the program heading indicates otherwise, you can assume that a program will run under any standard version of BASIC on any standard hardware configuration of your machine. Note the following for future reference:

- A program coverage chart and a list of the exact systems we test on appear in *The Programmer*.
- "Apple II series" programs will run under Applesoft BASIC on the Apple II plus (w/language card), IIe, and IIc. Programs requiring a disk drive will work equally well under DOS 3.3 or ProDOS.
- IBM compatibility of BASIC programs is determined by both the hardware and the version of BASIC used. Our programs for IBM PC and compatibles are composed on IBM PC and PCjr's, and are tested under most versions of BASIC available for these machines. They are then tested on a variety of IBM-compatible machines under the versions of BASIC supplied with them.

2. If you have a disk drive, prepare ("format" or "initialize") a disk so you can save the program once you're finished typing. Your DOS (Disk Operating System) manual or disk-drive manual will tell you how.

3. Get your version of BASIC fired up and ready. Read the introductory chapters of your BASIC manual for instructions.

WHILE TYPING, KEEP IN MIND THAT . . .

1. BASIC programs consist of "lines," each beginning with a line number (Macintosh BASIC "lines" don't need line numbers), containing letters, numbers, and punctuation marks of various kinds. Each "line" may be composed of several "statements"—instructions that tell the computer to perform various actions—and may continue over several physical lines on the page and/or on your screen.

When typing in a BASIC program, forget considerations of format and get the *content* of what you type to match the *content* of what you see on the printed page. Regardless of how margins may break up a program "line," it hasn't ended until you reach another line number or the end of the program listing. Begin typing with the line number, then continue on, typing every letter, number, space, and punctuation mark in the order it appears, ignoring margins. Where the "line" ends, there will usually be some trailing spaces (which you don't have to type in), followed by the next line number at the left margin of the listing. At this point, all you have to do is press the RETURN or ENTER key to register the "line" in memory, then continue with the next "line."

2. All marks in a program listing—including every letter,

number, space, and punctuation mark—*mean* something to your computer. Moreover, even symbols that look very similar to you mean completely different things to the machine. For example, it is important to distinguish between "1" (number one) and "l" (small letter "L"), or "O" (capital letter "O") and "0" (digit zero). Note that zeros are slashed in listings to facilitate discrimination.

It's important, therefore, to duplicate every line exactly when typing. Otherwise you can't expect the program to work as it should, or even work at all. Even uppercase versus lowercase is important on certain computers; the words "PRINT" and "print" may mean different things.

3. Each computer has its own commands and keys for program "editing," and your user's manual will tell you how to use them. Besides the editing keys, there are two sure-fire ways of correcting errors in a BASIC program line. If you're just typing along and make a mistake, press the backspace-delete key (the back-arrow key on most systems) to rub out the offending character, and then continue typing. Once you've pressed RETURN or ENTER to register the line, mistakes are a little harder to fix. You must use the editing keys or type the line in again from the beginning (including the line number) and press RETURN or ENTER. The new line will replace the old one with the same line number in your computer's memory. This option is a little more work, but foolproof.

AFTER YOU'VE FINISHED . . .

1. Just type RUN and press RETURN or ENTER. If you've typed everything correctly, the program should work as described.

2. Of course, it almost never does, not even for seasoned programmers. Typing in a program and having it run off the bat qualifies as a small miracle. Usually there are one or more mistakes, major or minor, that have slipped past your careful scrutiny and are causing your computer to do unexpected things. Not to worry. Now comes what some people consider the most enjoyable part of the programming process: a procedure called "debugging"—finding and eliminating your mistakes. To review portions of your program on the computer screen, use the LIST command as explained in your BASIC manual. If you have a printer, you might find it more convenient to print out what you've typed (check your manual for the appropriate command). Look over each section of the program carefully, preferably with someone else's help. Make sure you haven't dropped a line or a character, miscounted spaces between a pair of quotes, mistaken a comma for a period, mixed up an "O" and a zero, or (most likely) all of the above. When you find a mistake, retype the offending line from the original listing, including the line number, and press RETURN or ENTER as explained above.

Naturally, mistakes tend to occur more frequently in certain areas of a program than in others. Complicated equations are easy to foul up by dropping or mismatching parentheses or math symbols. Data statements—program lines beginning with the usual number, followed by the word DATA—are another popular trouble spot. Check them carefully. And, of course, remember to SAVE a copy of the corrected program when you're finished.

RIFFRAFF

BY JOEY LATIMER

In music mumbo jumbo, playing a "riff" means performing several notes that, when put together, make up a unique pattern or musical event. This month's Microtones program, a song called *Riffraff*, is made up of 10 two-bar riffs that I use on occasion when playing bass or lead guitar. I transferred the riffs, note by note, from guitar to computer. Once the riffs had all been entered into the computer, I arranged the riffs into an order that sounded pleasing, threw in some random riffs, and out came *Riffraff*!

To use *Riffraff*: Type the BASIC program into your computer, SAVE it, then RUN it. If you run



into errors, check your typing very carefully, especially the DATA statements.

NOTE: For extra fun, see if you can figure out how to change the program so that keys (the number keys, for instance) trigger different riffs to play. Also, see if you can make your own riffs by changing information in the data statements.

Apple II series/Riffraff

```
10 DIM N(10,17):HOME
20 HTAB 13:VTAB 10:PRINT "----RIFFRAFF--"
30 FOR X = 768 TO 804:READ A:POKE X,A:NEXT X
40 FOR X = 1 TO 10:READ Y:N(X,17) = Y
50 FOR Z = 1 TO Y:READ A:N(X,Z) = A:NEXT Z,X
60 A = INT(RND(1)*7)+2:A = A+(A > 6)
70 B = INT(RND(1)*4)+3
80 FOR X = 1 TO 10:GOSUB 1000:NEXT X
90 X = A:GOSUB 1000:X = B:GOSUB 1000:GOTO 60
1000 FOR Z = 1 TO N(X,17) STEP 2:POKE 6,20*N(X,Z)+1
1010 POKE 8,N(X,Z)*1.03
1020 CALL 768:NEXT Z:RETURN
2000 DATA 165,8,201,2,176,2,169,2,74,133,10,164,8
2010 DATA 240,8,173,48,192,234,234,136,208,251,56
2020 DATA 165,7,229,10,133,7,176,235,198,6,208,231,96
3000 DATA 10,162,1,136,1,162,2,136,2,128,2
3010 DATA 12,121,1,0,1,60,2,121,1,121,1,60,2
3020 DATA 16,121,1,60,1,108,1,53,1,102,1,50,1,91,1,45,1
3030 DATA 16,121,1,121,1,60,1,60,1,121,1,121,1,60,1,60,1
3040 DATA 8,121,1,136,1,121,2,136,4
3050 DATA 16,121,1,68,1,121,1,91,1,68,1,121,1,136,1,12,1
3060 DATA 16,243,1,64,1,72,1,64,1,81,1,72,1,91,1,81,1
3070 DATA 16,136,1,121,1,102,1,91,1,81,1,68,1,60,1,50,1
3080 DATA 14,60,1,68,1,60,1,81,1,68,1,60,1,60,2
3090 DATA 16,81,1,40,1,85,1,42,1,91,1,45,1,102,1,96,1
```

Commodore 64 & 128 (C 64 mode)/Riffraff

```
10 DIM N(10,25):S=54272:PRINT CHR$(147):POKE 53281,0
20 POKE 214,10:PRINT:PRINT TAB(12);"----RIFFRAFF--"
30 FOR X=0 TO 23:POKE S+X,0:NEXT X
40 POKE S+24,15:POKE S+5,39:POKE S+6,137
50 FOR X=1 TO 10:READ Y:N(X,25)=Y
60 FOR Z=1 TO Y:READ N(X,Z):NEXT Z,X
70 A=INT(RND(1)*7)+2:A=A-(A>6):B=INT(RND(1)*4)+3
80 FOR X=1 TO 10:GOSUB 1000:NEXT X
90 X=A:GOSUB 1000:X=B:GOSUB 1000:GOTO 70
```

```
1000 FOR Z=1 TO N(X,25) STEP 3:POKE S+4,17
1010 POKE S+1,N(X,Z):POKE S,N(X,Z+1)
1020 FOR DE=1 TO 55*N(X,Z+2):NEXT DE
1030 POKE S+4,16:NEXT Z:RETURN
2000 DATA 15,12,143,1,14,239,1,12,143,2,14,239,2,15,21,0,2
2010 DATA 18,16,195,1,0,0,1,33,135,2,16,195,1,16,195,1,33,135,2
2020 DATA 24,16,195,1,33,135,1,18,209,1,37,162,1
2030 DATA 19,239,1,39,223,1,22,96,1,44,193,1
2040 DATA 24,16,195,1,16,195,1,33,135,1,33,135,1
2050 DATA 16,195,1,16,195,1,33,135,1,33,135,1
2060 DATA 12,16,195,1,14,239,1,16,195,2,14,239,4
2070 DATA 24,16,195,1,29,223,1,16,195,1,22,96,1,29,223,1
2080 DATA 16,195,1,14,239,1,16,195,1
2090 DATA 24,8,97,1,31,165,1,28,49,1,31,165,1,25,30,1
2100 DATA 28,49,1,22,96,1,25,30,1
2110 DATA 24,14,239,1,16,195,1,19,239,1,22,96,1,25,30,1
2120 DATA 29,223,1,33,135,1,39,223,1
2130 DATA 21,33,135,1,29,223,1,33,135,1,25,30,1,29,223,1
2140 DATA 33,135,1,33,135,2
2150 DATA 24,25,30,1,50,60,1,23,181,1,47,107,1,22,96,1
2160 DATA 44,193,1,19,239,1,21,31,1
```

IBM PC & compatibles/Riffraff

```
10 KEY OFF:CLS:RANDOMIZE TIMER:COLOR 12
20 LOCATE 10,13,0:PRINT "----RIFFRAFF--"
30 FOR X=1 TO 10:READ A(X):NEXT X:PLAY "T205L8"
40 FOR X=1 TO 10:PLAY A(X):NEXT X
50 PLAY A$(INT(RND*7)+2)
60 PLAY A$(INT(RND*3)+4):GOTO 40
1000 DATA 00GB-L4GB-BL8,01CP8>C4<CC>C4
1010 DATA 01C>C<D>D<E>E<F>F,01CC>CC<CC>CC
1020 DATA 01C<B>C4<B-2,01CB-CFB<B->C
1030 DATA 00C>BAGBAGF,00B->CE-FGB->CE-
1040 DATA 02C<B>C<GB->CC4,01G>G<F#>F#<F>F<E-E
```

Macintosh/Riffraff

```
DIM N(10,18),WAVX(256)
CLS:LOCATE 8,24>PRINT "----RIFFRAFF--"
FOR X=1 TO 10:READ Y:N(X,18)=Y
FOR Z=1 TO Y:READ A:N(X,Z)=A:NEXT Z,X
FOR X=-128 TO 127:WAVX(X+129)=X
NEXT X:WAVE 0,WAVX
MAINLOOP:
A=INT(RND(1)*8)+2:B=INT(RND(1)*5)+3
FOR X=1 TO 10:FOR Z=1 TO N(X,18) STEP 2
GOSUB PSOUND:NEXT Z,X:X=A
FOR Z=1 TO N(X,18) STEP 2
GOSUB PSOUND:NEXT Z,X=X
FOR Z=1 TO N(X,18) STEP 2
GOSUB PSOUND:NEXT Z
GOTO MAINLOOP
PSOUND:
SOUND N(X,Z),1.5*N(X,Z+1),0
SOUND 0,1,0:RETURN
DATA 10,196,1,233,1,196,2,233,2,247,2
DATA 12,262,1,0,1,523,2,262,1,262,1,523,2
DATA 16,262,1,523,1,294,1,587,1,311,1,622,1,349,1,698,1
DATA 16,262,1,262,1,523,1,523,1,262,1,262,1,523,1,523,1
DATA 8,262,1,233,1,262,2,233,4
DATA 16,262,1,466,1,262,1,349,1,466,1,262,1,233,1,262,1
DATA 16,131,1,494,1,440,1,494,1,392,1,440,1,349,1,392,1
DATA 16,233,1,262,1,311,1,349,1,392,1,466,1,523,1,622,1
DATA 14,523,1,466,1,523,1,392,1,466,1,523,1,523,2
DATA 16,392,1,784,1,370,1,740,1,349,1,698,1,311,1,330,1
```


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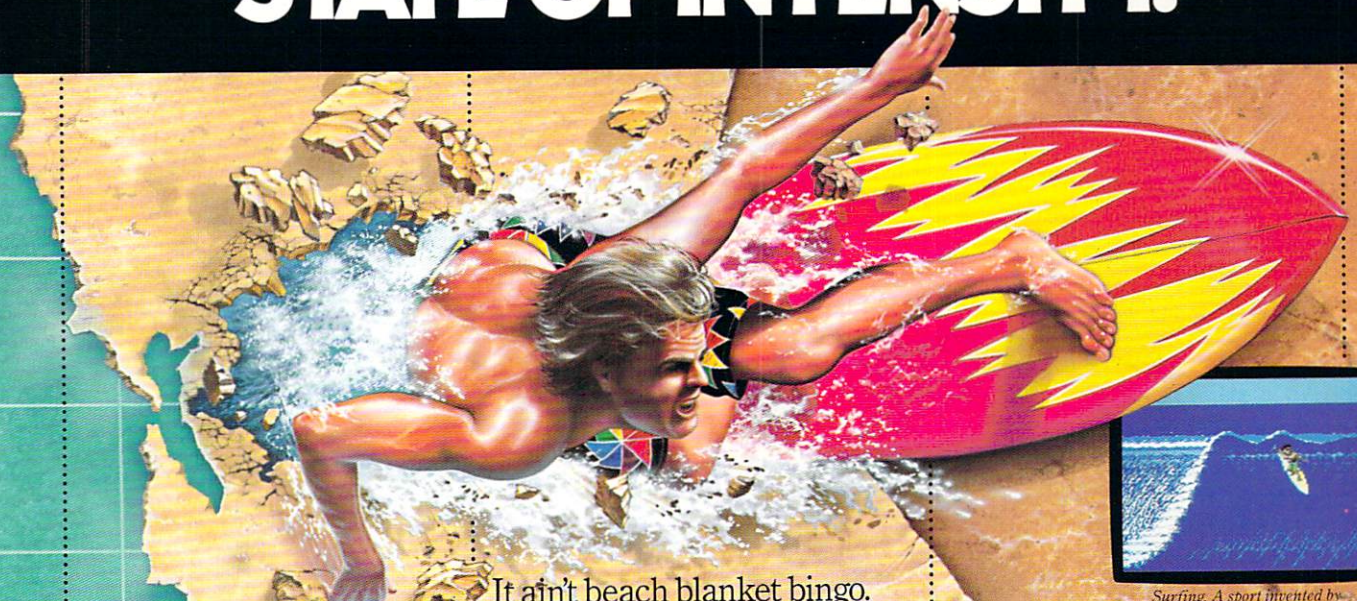
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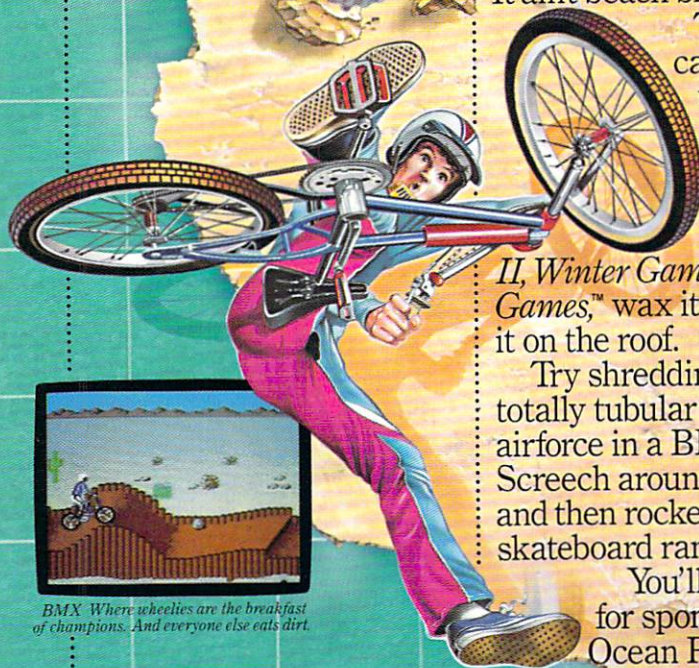
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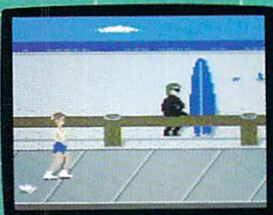
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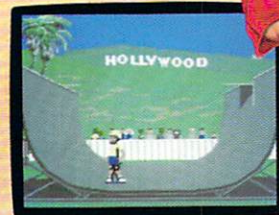
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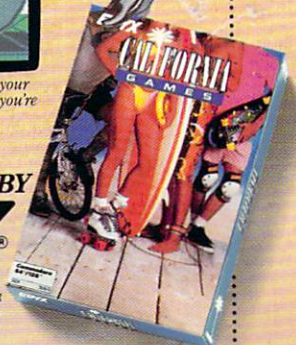
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